COLLABORATION MATTERS

A retrospective of three user-centred building projects at Aalto University

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Abstract

User involvement in its varied forms is becoming a reality in many building projects. The year 2020 marks a rise of service design in the context of building planning in Finland as new guidelines in the building and real estate industries were introduced by a respected Building Information group. Service design is used as an umbrella term for various participatory and observatory methods in the guideline. However, this approach does evoke important questions concerning the different modes of working and objectives of user involvement throughout the planning process in architecture and building.

The purpose of this study is to clarify how to involve users and the various design objectives considered throughout the planning process in architecture and building. This study examines these processes within multiple case studies. Three building planning projects done in Aalto University are selected to situate the theory within the practice and to elucidate the complex phenomenon of user-centred planning. This thesis approached the topic by using qualitative research and investigated collaborative actions using both documentary research and semi-structured interviews (n=10). Furthermore, the collaborative design is analysed using both thematic and visual design methods based on the rich data gathered.

Two main results are identified based on the analysis. Firstly, the study creates an overview of a profoundly human-centred planning process combining the findings from the case studies and the insights from the literature review. In this process, three primary levels of action with clear phases for collaboration and diverse objectives for the use of design were revealed. Secondly, the theoretical part of this thesis addresses four stages of the collaborative process, including the following three main user-centred modes of working which are: (1) no-direct-participation with emphases on user investigation and inspiration; (2) participation with emphases on democratic and communicative acts; and (3) collaboration with emphases on collective creativity and shared expertise. This study revealed that a successful user-centred planning process calls for expertise in the strategic use of collaborative modes of working.

The results presented here may facilitate improvements in strategic method selection in building planning in general and particularly in the early collaborations for shared vision making. Based on this study, multiple future research areas for design are identified. Strategic method selection for collaborative project planning, shared vision and sense-making at the beginning of architectural planning, as well as the connection of service design with workplace design, are all areas to be further examined in the future.

Key words Human-centred design, User-centred design, collaborative design, participatory design, strategic co-design, service design, service design for architecture, transformation design

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Käyttäjälähtöinen kehittäminen arkipäiväistyy niin rakentamisen toimialalla kuin myös muussa kehittämisessä. Myös palvelumuotoilun lisääntynyt käyttö Suomessa vie käyttäjälähtöistä kehittämistä eteenpäin. Aihe on erittäin ajankohtainen, sillä keväällä 2020 Rakennustietosäätiö RTS sr:n alainen toimikunta julkaisi tilaajan ohjeen palvelumuotoilusta osana rakennushankkeita ja kiinteistöjen kehittämistä. Kyseinen ohje herättää kuitenkin kysymyksiä kokonaisvaltaisesta ymmärryksestä, miksi käyttäjiä pitäisi osallistaa ja mitä eri keinoja siihen on.

Tässä työssä pyritään luomaan ymmärrystä ilmiöstä kokonaisuutena. Opinnäytetyötutkimuksessa tutkittiin käyttäjälähtöisten rakennushankkeiden aikaisia tapahtumia tarkastelemalla kolmea Aalto-yliopiston rakennushanketta. Tutkimuksessa aihetta lähestyttiin laadullisen tutkimuksen, sisältöanalyysin ja puolistrukturoitujen haastatteluiden (n=10) kautta. Sisältöanalyysin ja visuaalisen kuvituksen avulla analysoitiin suunnittelun aikaisia kehittämiseen ja yhteissuunnitteluun tähtääviä tapahtumia. Haastatteluiden ja teema-analyysin avulla etsittiin toistuvia teemoja.

Aineiston analyysi johti kahteen merkittävään tulokseen. Ensimmäinen on kuvaus yhä ihmislähtöisemmästä suunnittelusta ja rakentamisen prosessista. Aineistosta erottuu kolme käyttäjälähtöisen kehittämisen tasoa, selkeät yhteiskehittämisen vaiheet rakennushankkeen rinnalle sekä kolme päätavoitetta yhteistyölle. Toinen merkittävä tulos on kirjallisuusosiossa kuvattu teoreettinen viitekehys käyttäjälähtöisyyden ja yhteiskehittämisen kypsyyden tunnistamiseksi. Tässä viitekehyksessä yhteiskehittämisen muodot jaetaan kolmeen osa-alueeseen: ei käyttäjäosallisuutta, jolloin painopiste on käyttäjätutkimuksessa ja inspiraation etsimisessä; käyttäjien osallistaminen, jolloin painopiste on demokraattisen päätöksenteon, viestinnän ja yhteisen ymmärryksen mahdollistamisessa; yhteiskehittämisessä, jolloin painopiste on yhteisessä tiedon luomisessa ja jaetussa asiantuntijuudessa. Tämä opinnäytetyötutkimus paljastaa, että onnistunut käyttäjälähtöinen kehittäminen vaatii yllä kuvattujen yhteiskehittämisen työmenetelmien strategista käyttöä.

Tutkimustuloksista voi johtaa kehitysaihioita rakennushankkeiden strategisen menetelmän valintaan sekä yleisellä tasolla että painottaen alkuvaiheen yhteistä visiointia. Tutkimuksessa tunnistetaan myös useita aihioita lisätutkimukselle. Esimerkiksi muotoilun rooli yhteisen tahtotilan ja ymmärryksen luomisessa ennen arkkitehtisuunnittelua sekä palvelumuotoilun ja työympäristökehittämisen lähestymistapojen yhdistäminen osana alkuvaiheen käyttäjäymmärryksen luomista ovat mielenkiintoisia aiheita lisätutkimukselle. Kaiken kaikkiaan tutkimus pyrkii tuomaan arvokkaita oivalluksia niin ammatinharjoittajille kuin muillekin rakennushankkeisiin ryhtyville.

Avainsanat *Ihmiskeskeinen suunnittelu, käyttäjälähtöinen suunnittelu, osallistava suunnittelu, yhteiskehittäminen, yhteissuunnittelu, palvelumuotoilu, palvelumuotoilu arkkitehtuurissa, muutosmuotoilu*

Preface and acknowledgements

When applying to Aalto University in 2017, I had been working full-time for four years in an architectural office as an interior architect and workplace consultant. Service design had become a hot topic in practice with a slight confusion of the difference between workplace and service design development. Furthermore, when I discovered the new guideline edited by the respected Building Information group, I got intrigued even more. I embarked on this journey intending to make sense of the complex phenomenon. Alongside my studies, I have established a design and consulting company to enhance collaboration during building planning processes. Therefore, my motivation to do this study is to grow as a professional as well as a researcher.

I would not have been able to do this study without the support of several people and the inspiring community of Aalto University. First of all, I would like to thank the supervisor of this work, ***Ramia Mazé***, who has a phenomenal talent to see the essence of any work and ask the right questions in order to find the focus. Next, I would like to thank my advisor, ***Valeria Gryada***, who contributed her time and energy to this work and pushed me to focus on the writing even more. Overall, the research would not have been the same without the academic support.

Second of all, I would like to thank ***the people*** who gave their valuable time for ***the interviews***. Their curiosity to the topic of this research raised insightful discussions in which this research builds upon.

Lastly, this work would not be possible without the love and support of my ***family, friends and colleagues*** alike. I want to give special thanks to my partner Joonas, sister Jasmina, friend Mia, business associate Marko and our thesis peer-group Anna-Sofia, Miika and Lara. Finally, I would like to thank Lea and Irina for proofreading as well as the writing clinic services at Aalto University.

Helsinki, April 2020
Julianna

Glossary of terms

The building planning process in the context of architecture and construction typically have three primary phases: (1) Project preparation phases with both study and project planning phases; (2) Architectural planning phases with proposal, general and final planning phases; (3) Phases of construction and commissioning of the building (Building Information Foundation RTS sr, 2016).

Design is a process of problem-solving. In other words, it is about creating solutions for specific challenges. It is impossible to provide one ultimate definition because the design is expanding to new fields (see, e.g. Jones, 2014; Jones & van Patter, 2009; Mager, 2009; Sangiorgi 2001; Buchanan, 2001) with changemaking and sensemaking objectives along with the traditional design objectives (see, e.g. Brown, 2009; Buchanan, 2001; Herbert, 1996; Krippendorff, 1989, 2005).

The approach is a mindset for the design process, how design is being done. (Hyysalo, 2009).

Methods are tools to actualise the mindset. Methods are typically based on six main methods: 1) The designers' experience, vision and hypotheses; 2) The direct collaboration with the users such as a workshop; 2) The observations; 3) The interviews; 4) The usability tests; 5) The analysis of the artefacts; 6) The use of models and prototypes in the data gathering or organising data; 7) Desktop research and analysis. (Hyysalo, 2009, p. 74). Note: Techniques or tools are more detailed ways to visualise, collect or develop data such as persona-cards.

User-centred design is an approach which involves users to the development and designing process. Furthermore, it draws information from actual users of a product and uses that information to design products iteratively (Usability Professionals' Association 2020; ISO, 1999).

Human-centred design is an approach for design or development of a system aiming to interactive, more usable outcomes. The term human is used instead of a user to emphasise users at large, all of the possible stakeholders. Users are the ones who interact with the system, whereas stakeholders are part of organisations who have an interest, claim or a right in a system. (ISO, 2019).

In this study, the modes of a user-centred way of working are grouped into three primary modes in order to make sense of the various ways to involve users.

1) No-direct-participation is about gaining knowledge about the users of the building. It includes investigative and user-inspired approaches (Hyysalo & Johnson 2015-2017; Hyysalo, 2009).

2) Participation is an approach which involves people into the development of ideas. The participatory process has emphases more in organisational development (Mattelmäki & Visser, 2011) and democratic and communicative acts (see, e.g. Gutmann & Thompson, 2004; Mouffe, 2000).

3) Collaboration is similarly involving people to development. It has emphases on collective creativity and shared expertise (see, e.g. Thackara, 2005; Mattelmäki & Visser, 2011; Cottam & Leadbeater, 2004; Vaajakallio, 2012).

Strategic collaborative design is needed to select the appropriate approach with the accurate method-mixes for the challenges of design. The era of user involvement has increased how to involve users; therefore, the critical view to method selection is crucial. (See, e.g. Hyysalo et al., 2016; Hyysalo & Hyysalo, 2018; Hyysalo & Johnson, 2015-2017).

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1. INTRODUCTION

1.1 The context of the planning process in architecture and building

The built environment is associated with physical buildings, areas and cities. Cities are places for social processes, institutions and governance (Seto et al., 2010). Buildings and areas have social, virtual and physical dimensions, including areal or communal identities. The considerations in architecture are simultaneously functional, organizational, economic and aesthetic as well as mythical, social and collective (Ahlava, 2002).

Fields of planning and architecture are often faced with complex problems. These multifaceted challenges make issues of services as well as the built environment not only complicated but impossible to design and fully predict. Most of the problems in architecture and urban design can be seen as “ill-defined” which means that they are open both ends, and the means are unclear (Newell et al., 1957).

The field of design has been expanding rapidly towards solving more intangible, complex problems and systems. Designers' roles have been moving from operational product design to more strategic contributions to societal issues based on the needs of the time (Brown, 2009; Thackara, 2005; Valtonen, 2007). Mazini (2011) claims that design practice in the twentieth century can be described as depletion of control and discovery of complexity.

These complexities in the built environment have broadened the scope of design from a service context to the realm of organizational and behavioural change (Sangiorgi, 2009). With the expansion of service design, it has lost some of its credibility. Hence, “designing for services” instead of “service design” is gaining more attention. (Meroni & Sangiorgi, 2011). Meroni and Sangiorgi (2011) are proposing that within this new arena of design, which they address as “the transformative potential of services”, design tasks are linked with interactions, relations and experiences. Although production may still be the goal, instead of aiming towards single product development, the task can be about designing a system around it. The shift from designing services to designing societal transformations is creating new possibilities for design (see, e.g. Buchanan, 2001; Jones, 2014; Jones & van Patter, 2009).

1.2 The context of user-centred and collaborative design

User involvement in its many forms has become increasingly popular in the built environment. Scholars state that we are living in a time of complexity and a rise of more systemic and strategic design approaches (Brown, 2009; Manzini, 2011; Thackara, 2005). Sanders and Stappers (2008, p.10) argue that gradually, it is becoming apparent that the user-centred design approach cannot adequately address the range of current challenges. Service design with experience design is enriching architectural and interior design fields along with other disciplines. Inevitably, the role of design in the context of the building design and planning is becoming increasingly relevant.

Typically, individuals tend to disappear in complex systems. Buchanan (2004, p. 100) points out that in these multifaceted systems "integrating human beings into broader ecological and cultural environments" becomes important. The emphatic design aims to create an overview in which individuals stand out (Sustar & Mattelmäki, 2017). For this to be accomplished, the rise of service design is essential.

In Finland, the rise of service design in the context of building planning is topical in the year 2020. The new Building Information Guideline about Service Design in the Real Estate and Building Industry (2019) defines service design as an approach to collect user data and to interpret the data with different participatory and observatory methods. Scope of service design can include the entire industry with services and environments aiming to better and more effective solutions. The benefits of service design in building planning could include, for example, an increase in customer value, the development of culture, or the strengthening of business (Building Information Foundation RTS sr, 2019, p. 1).

In other words, service design is creating new opportunities for design in the architectural and building planning, yet it is causing the definitions of user-centred and collaborative design to become ever more ambiguous. In summation, new design approaches are desired even though more strategic outlooks regarding the selection of these approaches are required.

1.3 Thesis structure

This thesis is divided into eleven chapters. The structure follows a typical research process by first setting the stage, then creating an outlook of relevant literature, followed by the objectives and the research questions, and finally, the data, methods and analysis process. After considering the case studies and research findings, the thesis is closed with discussions and conclusions. Next, each of the chapters, as mentioned earlier, will be described in more detail.

Chapter 2. Research Setting. This chapter will describe the research context of Aalto University and the three selected cases: (1) The School of Arts Design and Architecture building; (2) The School of Business building; and (3) The Harald Herling Learning Centre, with three libraries combined, building.

Chapter 3 and 4. Literature review in two parts. Overall, these chapters will introduce relevant literature in order to provide a contextual framework for the topic. The first chapter aims to understand the context of the built environment and the typical building planning processes with the evolution of user-centred and collaborative design approaches. The next chapter aims to clarify the various terms used within these contexts and finally, to summarise the critical theories into a framework to be used in the multiple case studies. The selected literature derives from both international and domestic sources as well as from academia and popular literature. This wide range of literature was chosen to display a diverse overview of the topic.

Chapter 5. Research objectives. This chapter introduces the objectives of this study while identifying the research gap and the research questions.

Chapter 6. Methods and data. This chapter introduces the selected research approach and methodology. The research is conducted using a multiple case study as a research framework to explore the complex phenomenon. The qualitative data is collected using two methods: documentary research and semi-structured interviews. The last two sections present the criticisms towards the selected methods as well as the ethical considerations for the interviews.

Chapter 7. Data and analysis. This chapter opens up the research process with data collecting and analysing phases. The data was collected and analysed in two phases: documentary research and semi-structured interviews. Based on the interviews, a thematic analysis was done.

Chapter 8. Multiple case study: Analysis of three building planning cases. This chapter presents the three cases and creates an overview of the building processes. Based on the documentary research, a visualised map of each process is illustrated and presented in this chapter. The illustrated maps are cross-checked with the findings of the literature review, and the activities of the process are then colour coded accordingly.

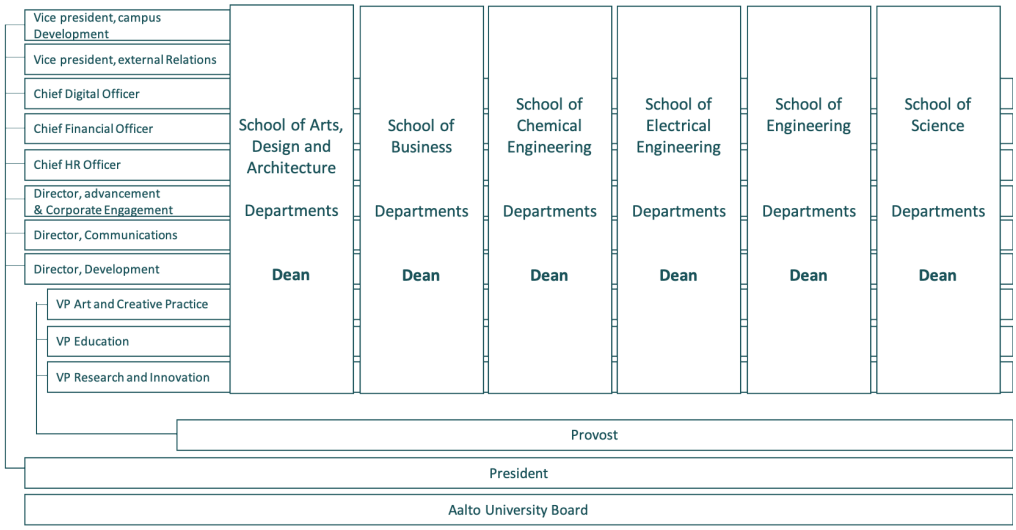
Chapter 9. Research Findings. This chapter presents the findings from the data analysis of the documentary research and semi-structured interviews. This chapter answers the three research questions presented in chapter 5.

Chapter 10. Discussions of the findings. This chapter clarifies the results of the study based on the research questions. Firstly, the connections between the findings of the research and those of the literature review are highlighted. The research questions are being discussed and key insights identified.

Chapter 11. Conclusions. This chapter clarifies the results of the study. Furthermore, the insights from applying visualisations to the process, contributions to the practice and suggestions provided for future research, along with the limitations of this research are introduced. The last section of conclusions creates a final look at the findings and topic as a whole.

2. RESEARCH SETTING

This thesis focuses on user-centred and collaborative design utilised during the planning processes in three building projects at Aalto University in Finland. This chapter describes the research context of Aalto University and the three selected cases: (1) the School of Arts, Design and Architecture, building; (2) the School of Business, building; and (3) the Harald Herling Learning Centre, building.



2.1 Aalto University

Aalto University (later referred as Aalto), as it is known today, was established in 2010. Before the reform, there were three schools: (1) the Helsinki School of Economics; (2) the Helsinki University of Technology; and (3) the University of Art and Design Helsinki. Today, Aalto University comprises six schools, each with their deans and academic committees: (1) the School of Arts, Design and Architecture; (2) the School of Business; (3) the School of Chemical Engineering; (4) the School of Electrical Engineering; (5) the School of Engineering; and (6) the School of Science. Almost 12 000 students and 4000 personnel are (400 of whom are professors) working and studying in the Campus area of Otaniemi. (Aalto University, 2018).

Figure 1. *The organization of Aalto University (adopted from Aalto University, 2019).*

Aalto's mission is to strengthen the innovative capacity of Finland through research, education and art (Aalto University, 2015). According to their website, the brand image of the now unified Aalto is all about aiming to grow bold thinkers to identify and solve significant societal challenges in order to build a better and more innovative future. The different schools have their own identities based on their histories. Additionally, they embrace being part of one university that combines

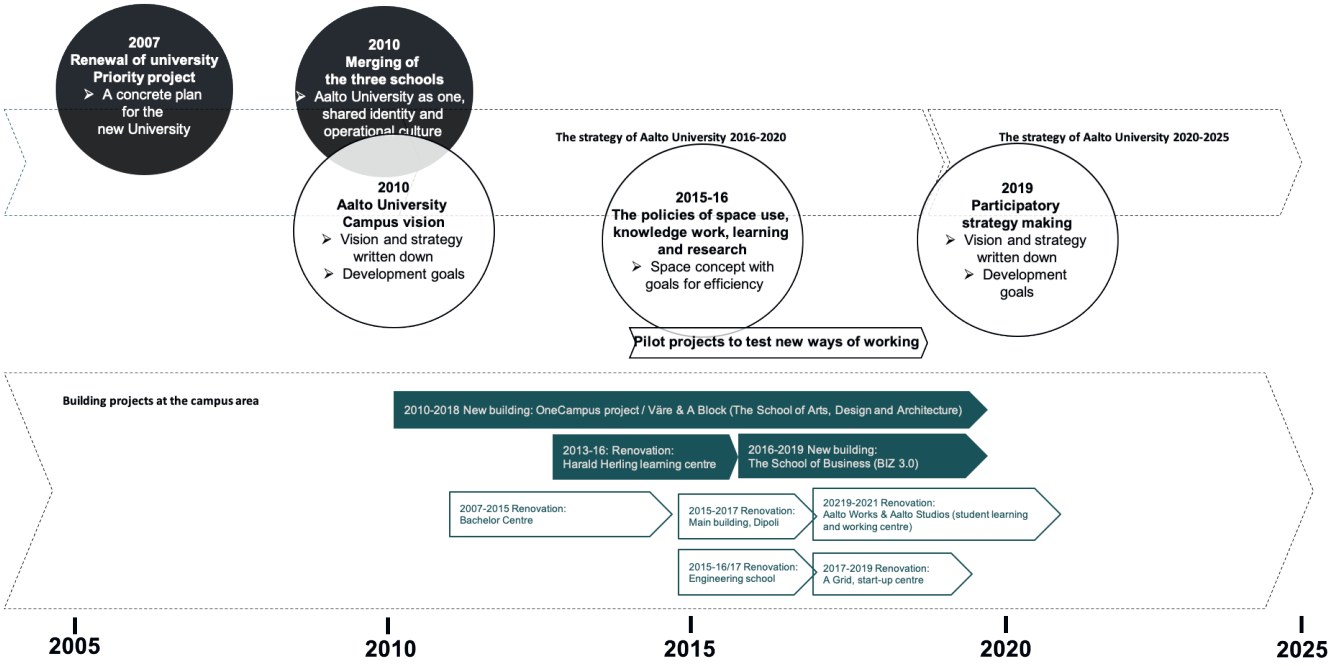
science, technology, art and business. This thesis studies three building projects at Aalto University in more detail. These cases are connected to the school of Arts, Design and Architecture, the school of Business and the shared library and learning centre, Harald Herling Learning centre.

The School of Arts, Design and Architecture (later referred to as Case Väre) has high scores in the global academic rankings and is well known and valued in Finland. According to the official website of Aalto, they "educate the next generation of filmmakers, designers, artists and art educators, photographers, architects and researchers to impact society through their creative work and research" (Aalto University, 2019). The school has existed for almost 150 years, boasting a long and rich history.

The School of Business (later referred to as Case BIZ) is one of the leading business schools in Europe. Being nearly 100 years old, the school of Business has a storied history. According to the official website of Aalto, the school of Business educates "experts and leaders for the future and contribute to society through impactful research, long-term partnerships and societal engagement" (Aalto University, 2020).

The Learning Centre (later referred to as Case LeC) is not only a library of Aalto University but moreover, a learning centre. According to the official website of Learning Centre, the core of their services is to support research and studies. The physical building of Harald Herling Learning Centre, along with the learning hubs and service points around the campus area come together to create the Learning Centre. Furthermore, they provide exhibition and event spaces as well as a cafeteria and a video studio with a virtual reality testing room.

Decision making at Aalto University is layered. The board of the university, in conjunction with the president, oversee the decisions of the six schools. The Deans of the schools direct the activities within the schools while the two Vice Deans split the responsibilities of managing Research and International Cooperation and Teaching and Learning. Figure 1 illustrates the organization of Aalto University.



2.2 Moving into one campus

Before 2016-2019, the unification was mainly visible only at the level of organization and branding. In 2019, the change became real when all of the schools moved to the same campus located in Espoo, Finland. The starting point for spatial development was three separate locations for the schools and more remote offices in four different locations. The aim was to move all of the functions to one campus by the year 2021. Otaniemi became the central location, which created some specific parameters for building planning. The particular demands related to architecture, spatial development with change management, leading the campus vision and contextual research of the different needs.

Figure 2. *A picture of strategic actions and building projects at Aalto campus based on the documentary research (Nevari, 2020).*

The new location of Aalto University has a strong identity. The built environment of the Otaniemi campus area is historically and culturally classified as nationally significant (Aalto University, 2016). Otaniemi was built during the depression and after the war with the resources and materials available. However, Alvar Aalto, the star architect, was able to create timeless buildings with innovative interiors. He won an

architecture competition at the end of 1940 (Aalto University, 2018). The architectural vision follows the footsteps of Alvar Aalto with the human-centred, versatile, green and walkable area goals. This historical and cultural heritage created demands and expectations for the three cases studied in this thesis.

As Figure 2 indicates, many buildings in the area went under renovation simultaneously, or one right after another, and one completely new building was designed. Based on the documentary research, an overview of the various developments and building projects was formulated. See chapter 7 to learn more about the documentary research conducted.
The first building project was the School of Arts, Design and Architecture which began in 2010 and was extended until 2019. Simultaneously, the building in Otakaari 1 went through an extensive renovation creating a dedicated area for all of the bachelor's degree students in the campus area. The renovation project of the Learning centre started in 2013 while the renovations of the Engineering school and the main building of Aalto campus, Dipoli, commenced in 2015. Somewhat later, between 2015 and 2016, the start-up centres, coined A-Grid, was the next to follow along with the School of Business. The last building project and last addition to the infrastructure of Aalto was the renovation of Aalto Works. Aalto Works, once fully completed, will serve as a co-working and collaboration centre with spaces for the School of Engineering and Start-up Sauna and Design Factory.

Spatial efficiency has been a significant driver for change in all of the building and renovation projects mentioned above. The decrease in spaces was 29% from 2010 to 2018. Furthermore, spatial costs have decreased by 12% from the year 2012 to the year 2018. (Aalto University, 2018). Before moving all of the schools into the one campus, the schools were located all around Helsinki and Espoo. Even after the merging, nothing changed in the everyday operations of the schools until the physical building projects came into effect.

3. BACKGROUND: DESIGN & BUILDING PLANNING

This part of the thesis introduces relevant literature that provides a contextual framework of the topic. The selected literature hails from international and domestic sources and represents both academic and popular genres. This wide range of literature is chosen to represent a diverse overview of the topic.

This review is divided into two parts. Initially, it begins by making sense of the built environment, the typical flow of the building process and the evolution of user-centred design and collaborative design approaches. The review then continues, in the next chapter to elaborate on the diverse collaborative approaches with the aim to clarify the terminology used in the context of user-centred design. The final section of the literature review wraps up the theoretical perspectives into a collaboration framework.

3.1 The context of the built environment and building planning

The International Standard which provides recommendations to enhance the sustainable and accessible built environment defines the built environment as an internal or external environment with commissioned, designed, managed or constructed elements for people to use (ISO, 2011, 3.10). Pirinen (2014), in his doctoral dissertation, highlights the fact that housing as a product goes beyond architecture. In other words, conceptual planning is required with a scope that extends outside of the physical dimensions of a building. It has many scales of designerly elements, including factors such as technology, service, community and ownership. In these instances, design can focus on either one element or take a holistic approach that considers multiple components that create value for people.

3.1.1 Design at different scales

In the context of the built environment, an object of design is often a complex system such as human, environmental, manufacturing and

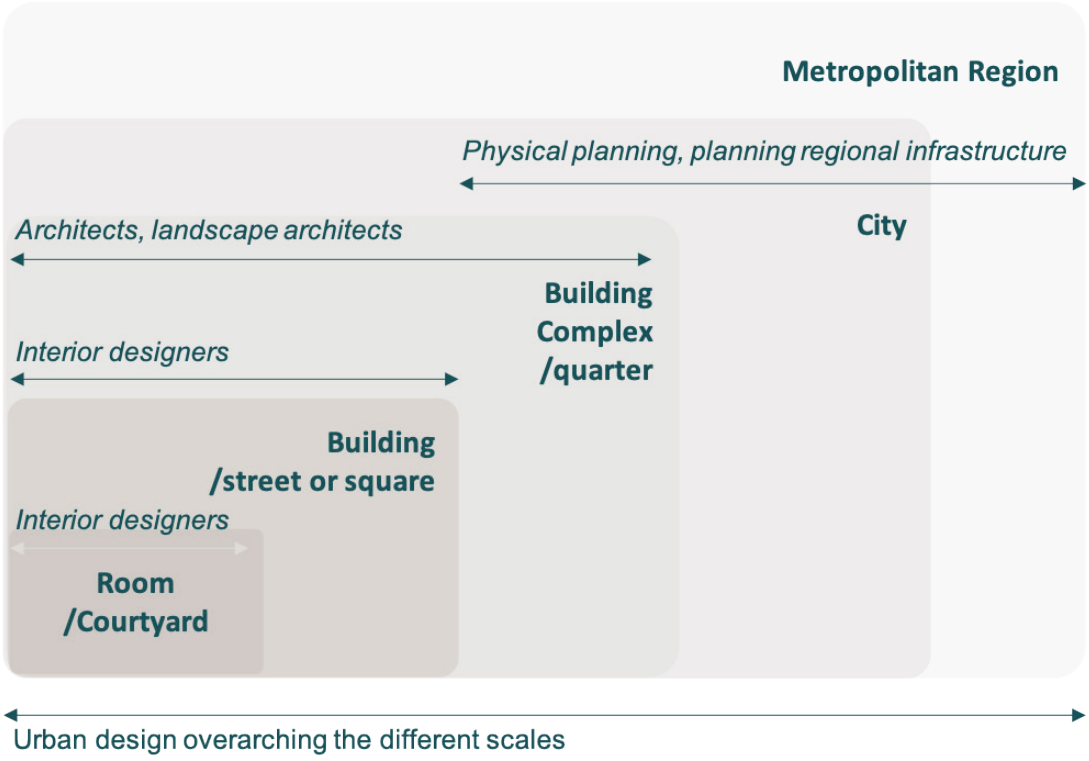


Figure 3. *Practitioners of built environment within scales of planning (adopted from Erickson et al., 2001; March et al.,2015).*

planning process systems (Johnson, 2005; Sallis et al., 2006; Soini, 2015; Verganti, 2009). With that being said, challenges and design tasks in the context of the built environment or urban areas are similarly complex and vary in scale (Ala-Mantila, 2017). The scales of the artefacts in the context of the built environment can be categorised into five levels of planning, as described in Figure 3. The smallest levels are the level of a room and courtyard, followed by the levels of a building, street and a square. The scale continues to grow from a building complex and a quarter until finally, one reaches into the levels of city and metropolitan region, see the figure above (Erickson & Lloyd-Jones, 2001; March & Léon, 2015). From the professional point of view, the tasks grow from design related to more technical tasks accomplished through architecture and engineering. In addition to these more traditional professions, urban design, along with collaborative practices, is connected to the built environment when moving through the different scales.

Urban design is a reasonably new discipline with roots from several disci-

plines that range from the social sciences to environmental psychology, to name a few. A precise theoretical framework for urban design is missing (Sternberg, 2000). The ambiguity of urban design is argued to need a broad definition as a multidisciplinary activity, managing and shaping the built environment as a whole with a conscious process (Madanipour, 1997). In short, urban design is a bridge between urban planning and architecture. It involves restorative practices of place-making, the architecture of the public realm, and is a form of public policy and community advocacy (Kamalipour & Peimani, 2019; Krieger, 2006).

In general, the sector of architecture, engineering and construction plays a significant role in increasing safety and health for the people using the buildings. It is a vital tool to impact on people's lives, transform their quality of life and their way of behaving (see, e.g. Laatikainen, 2019; Sallis et al., 2006). The field of urban planning is challenging. It is traditionally considered as working in a top-down fashion to ensure functional living environments for all. In urban planning, it should be considered that people feel connected to places where meaningful experiences are made. The challenge is how to develop existing environments while supporting the qualities and characteristics that are most valued by citizens. (Staffans et al., 2019). This same challenge applies on a smaller scale to the development of buildings where people continue to work and live.

Next, the literature review focuses on the scale of this thesis: design, architecture and building planning processes. The following sections continue with the exploration of the user-centred design in connection to collaborative design approaches.

3.1.2 The planning process in architecture and construction

Building planning processes in the context of architecture and construction are multifaceted with a series of phases. Even though processes may vary, certain similarities can be identified in the phases of the process. Typically, it begins with a project preparation that requires both study and project planning phases. A planning phase includes a

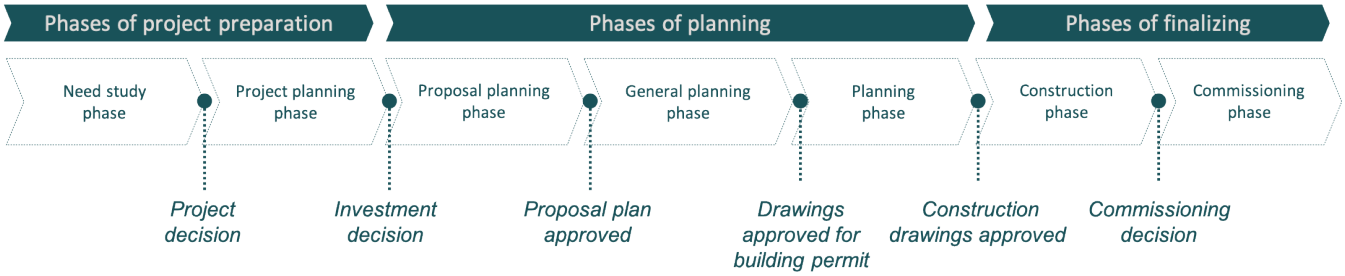


Figure 4. *Phases of a typical building planning process (adopted from The Building Information Foundation RTS, 2016).*

proposal as well as general and final planning phases and culminates in a construction phase and commissioning of the building. (Building Information Foundation RTS sr, 2016, p. 1). As Figure 4 indicates, this usual building planning process includes decision making for construction. The decisions to invest are connected to the calculation of costs during the planning process.

The beginning of a building project is when the most flexibility and open opportunities are afforded. While the process continues from preliminary work to actual planning, the possibilities narrow down (Kankainen & Junnonen, 2017). Traditionally, the need to control different demands diminishes towards the end of the process.

However, a new way of thinking about planning is by controlling demands more flexibly, which increases the possibility of modifying plans later in the process (Building Information Foundation RTS sr, 2019, p. 12). The tools to control and manage user-value include the spatial programme with project goals written in a project planning document, the data model with virtual or even physical spatial models and goal management tools. In the traditional model, the final changes to the drawings can be challenging to control and lead to unexpected costs.

To conclude, the building process follows the same traditional progression as it has commonly been done. While the field of construction has started to shift, the change is happening slowly, and the traditional processes are still the predominating ones.

3.2 The context of user-centred and collaborative design

This section focuses on new domains of design, leading to the evolution of the user-centred, collaborative and communicative design approaches. These approaches are further defined in the next chapter.

3.2.1 New domains of design

Whereas before, products were in the centre of the design; Today, entire systems are in the centre instead. Focus has shifted on human experiences and the context they happen in (Buchanan, 2001). Currently, the concept of design includes the intangible services, processes and changes in general next to the traditional furniture, product, interior or graphic design. In other words, the classic division of design disciplines into architecture, spatial, graphic, industrial, furniture and media, is no longer sustainable with the complexity of the challenges that designers are facing.

The latest expansions of design can be seen in the context of complex systems (Buchanan, 2001). One way to look at the evolution of different design areas is the four-point complexity and sensemaking scale of design, as described in Figure 6 (Jones, 2014; Jones & van Patter, 2009). The first area of design is the traditional design; the next one is the product and service design, which is followed by the organisational transformation design, and finally, the social transformation design. The difference between systemic design and user-oriented design lies in two primary elements. First, the boundaries of the context are different. Second, the scope of the people involved is different. User perspective in a social transformation design can be an entire society instead of mere individuals.

Along with these changing areas of design, the services of a designer are shifting from providing artistic services to becoming more of a strategic planner and professional “thinker” who can work across disciplines (Muratovski, 2016). The designer is almost like a translator at the boundary of human needs and technological possibilities. The designer's role is moving towards more complex directions where one should have a broad overview of the context in which they are working.

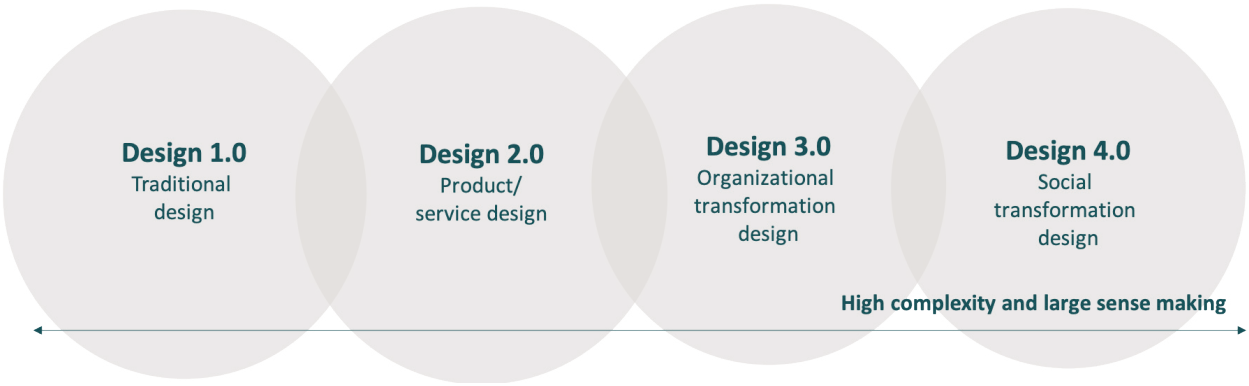


Figure 5. The four-point complexity and sensemaking scale of design (adopted from Jones & van Patter, 2009).

These new areas of design have powerful approaches, yet limitations do exist. The challenges are complex by nature, and these social problems do not typically have an ideal solution to be found (Rittel & Webber, 1973). The early participation in the development processes creates the need for a more holistic approach to creating socially responsible design solutions (Hasu et al., 2004). Most importantly, transformation designers should be able to answer the questions concerning who benefits from the change and which changes should be taken forward (Sangiorgi, 2011). Next, the evolution of user-centred and collaborative approaches are introduced to understand how user involvement has changed along with the change of design in general.

3.2.2 Evolution of user-centred and collaborative design practices

Several ideological and theoretical concepts of the collaborative practices can be identified that stem from different disciplines, such as political science and environmental-behavioural studies. In Finland, these different concepts are often mixed. (Bäcklund & Mäntysalo, 2010). Discussions about the collaborative, participatory and communicative planning date back to the 1960s in Europe and the United States (Puustinen, 2006). During those times, the user understanding, and ergonomics became valued, and designers were looking for evidence in their design actions. From the 1970s, designers started to focus more and more on the user's needs and hopes (Valtonen, 2007). Additionally, critical thinking concerning the state of society gave life to new domains of design.

Marketing research in the 1920s was one of the first approaches that

attempted to include users in the production process. The aim was to study consumers with a set of methods. In the 1950s, the sociological and psychological methods such as focus group interviews were primarily used. The aim was to understand the reasons why people chose certain products or brands over others (Hyysalo et al., 2016).
Participation in the field of planning has its roots in radical thinking connected to the political discussions about democracy. The time of postmodernism in the late 1970th century became a time of critical thinking towards capitalistic consumerism and mass production. One leading figure of that time was Victor J. Papanek, who is argued to have origins in the participatory design activism and developing radical participatory processes in Finland (Clarke, 2013; Papanek, 1971). The term participatory design was used in workplaces in Scandinavia, aiming to empower workers and labour unions (Mattelmäki & Visser, 2011). The participation included ideological aims.

The user-centred design draws back to the 1980s (e.g. Norman, 1988) and the background lies in the usability engineering for the human-computer interaction systems, which again are influenced by the fields of sociology and cognitive psychology. Around the same time, design expanded towards management, which became the new theme of discussion. While aiming to use design in management, the action research in the organisational development shared similar ideas with the participatory design, moving the focus away from design (Horgen et al., 1999). Herbert Simon (1996) wrote about the decision-making process within organisations, being the first one to write about design in the concept of management. Since then, the interest in designers' roles in organisations and their change processes has grown. Gradually, the design has adopted elements from business and strategy, and designers have taken more and more of a role in the broader positions with holistic control over their projects (Valtonen, 2007). The gap between services that design and management consultancies have been shrinking ever since.

With the expanding role of design in organisations and with the new communication technologies, new areas of design started to emerge around the 20th century. Alongside traditional product design, new

clusters of ideas and practices such as experience design, interaction design, service design and transformation design started to gain traction (Kimbell, 2009). As follows, design expanded to the field of service production and was coined service design. Service design has its roots in a product, user interface, experience and interaction design in addition to some elements from marketing research (Mager, 2009).
Since the emergence of the user-centred design approach, user involvement has become increasingly popular in the industry and academia alike (Hyysalo et al., 2016). As a result, multiple approaches are interpreting the usability approach such as participatory design, service design and lead user innovation. The terms co-design and co-creation are relatively new ones (Sanders & Stappers, 2008). Before this term was utilised, the practice of collective creativity was called participatory design. Initially, the user-centred design approach was more focused on the objective of user experience with measurable qualities. However, in time it evolved into more subjective user experience with contextual and comprehensive elements (Keinonen, 2006).

The broader changes in society connect to the transformation in the design field. The transition towards more sustainable futures is creating opportunities for design thinkers all around the globe. (Junginger & Sangiorgi, 2009). When designers become specialists of design by visualising, facilitating and even provoking conversations, those with explicit knowledge in specified subjects are becoming specialist in developing new, radical innovations and by solving persisting challenges (Buchanan, 2001; H. W. J. Rittel & Webber, 1973). The most significant driver to rethink the built environment is argued to be climate change (see, e.g. Brandon & Lombardi, 2011). It is a global issue that affects all nations. The planetary boundaries are exceeded, which calls for radical innovations to secure our future (Steffen et al., 2015).

To conclude, new approaches to design have been shifting away from the user-centred views and towards more holistic and systemic ones. Sanders and Stappers (2008, p. 10) state that “we are no longer simply designing products for users”. Instead, “we are designing for the future experiences of people, communities and cultures who now are connected and informed in ways that were unimaginable even ten years ago”. In the field of urban planning, user involvement has additionally, communicative and democratic aims.These are next,elaborated further.

3.2.3 Evolution of communicative processes in urban planning

In the field of urban planning, before the users or citizens became active partners, the power lay in the hands of the engineers and the scientific planners who relied on facts and quantifiable data with clear, rational planning practices. During this time, participation was considered more as giving an opinion, whereas it was the educated professionals who told facts (Staffans, 2004). With this degree of involvement, people can be considered as objects of planning.

The time of critical thinking raised awareness towards the degree of participation. The late 1970s brought attention to user exploitation as well as high hopes for democratisation. At the time, the understanding was that planning can be a form of political action wherein values could and should be involved in decision making (see, e.g. Castells, 1983; Horelli, 2002; Taylor, 1998). This political perspective turned the planner into an "advocate" or voice for their client groups (Davidoff, 1965, p.331). The concern became whether user participation was solely a way to manipulate users. Sherry Arnstein (1969) argued that participation needs a distribution of power in order to provide participants with a real opportunity to participate. She visualised a "ladder of participation" wherein the bottom of the rungs were relied on manipulation by those in power, and the top of the rungs relied on citizen power with their collective decision making powers.

The difficulty with the early participation approaches was that people typically did not have the necessary information on hand to understand the process and react to it early enough to have an impact on the result, whether it concerned a building, a service or a product. The challenges of earlier communicative approaches have guided the way towards new approaches with more open and transparent ways to communicate with the people. (Puustinen, 2006).

In the 1980s and 1990s, the communicative planning theory was aiming to equalise citizen participation. This utopian approach was criticised by some scholars (Bäcklund & Mäntysalo, 2010). The theorists' John Forester (1993) and Patsy Healey (1997) highlighted the importance of citizen participation in the early stages, in order for them to ask the right questions, and later throughout the process, to enable knowledge building (Bäcklund & Mäntysalo, 2010). In this communicative approach,

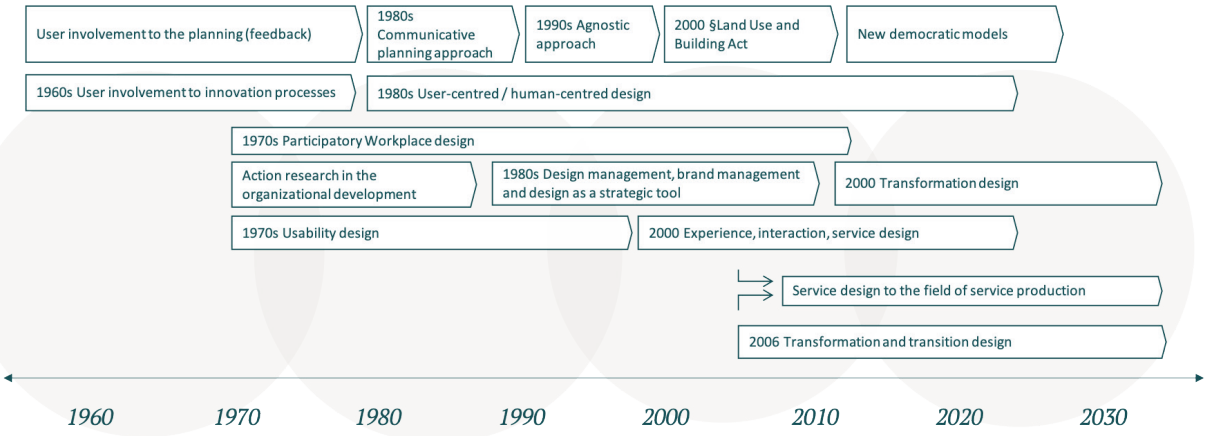


Figure 6. *Evolution of participatory approaches in the context of design and urban planning (Nevari, 2020).*

the ideal was to allow the freedom of speech, and the different perspectives to be taken into account.

The main principle behind communicativeness in planning was the concept of transparency. The communicative approach aims to highlight the plan itself and the process of planning to get everyone to adopt and support the outcome. The people were considered as partners in the process. This approach did not take into account the possibility of having contradicting opinions and futures (Bäcklund & Mäntysalo, 2010).

The next step in the planning theories was the rise of the agnostic approach. Forester (1993) and Healey (1997) took their perspectives further and stated that every citizen has different perspectives and needs. Together, these multiple perspectives transform the process of planning into a process where the understanding of the different perspectives and roles of the participants become the principal objective. This democratic view of planning highlights the diverse voices in order to keep society healthy (Mouffe, 2000; Staffans & Horelli, 2014). From this perspective, the understanding was that silenced conflicts become conflicts somewhere else.

As society is continuously changing, similarly, how citizens and users are involved in planning is taking new forms. These changes, such as an ageing population, longer life expectation and the increase in services affect everyone and everything. In the future, it is argued that participation in collaborative matters and decision making is in danger (Dhima, 2014; Närhi, 2004). Thus, the aim in democratic discussions

should be emphasised in the different platforms, for different voices (Mouffe, 2000). In this somewhat participative process, the aim can be to raise discussion, reflect on the actions of existing situations and create interest towards shared actions in the future. Hence, the contradictions and diverse opinions are the aims of democracy. This type of democratic model is a way to include citizens as part of the decision-making process, provide them with all of the information with transparency and a place to argue these decisions. The ultimate goal should be to create an outcome that people feel committed to, but that is still open for discussions in the future (Gutmann & Thompson, 2004).

In Finland, citizen participation took even a legal mandate when the Land Use and Building Act 2000 was first enacted in 1999 (§Land Use and Building Act 2000). This law ensures that everyone can participate in the open planning process, "Anyone affected by the plan" should have a possibility to participate in an open urban planning process as it is written in Finnish law. The aim of the participatory planning today is to collaborate over the silos and organisations and create shared expertise. Participation is seen as a part of the societal and democratic education of people. Two purposes for the participation are recognised: the decision-makers learn about the everyday life of the people, and the people can guard the democratically made decisions (Puustinen, 2006).

However, this approach includes particular challenges. One of which is that an open approach can create conflicts between the existing structures of the organisation, cities and municipalities (Närhi, 2004). Therefore, the openness in a process calls for creative communication and expertise to find the right path in the complex environments. Additionally, decision making can be slow. Thus, people should become actors in decision making in order to influence the investments made.

In summation, the role of design has expanded into multiple, different perspectives and multidisciplinary environments (Jones, 2014; Jones & van Patter, 2009; Mager, 2009). Design is becoming inseparable from organisational development (Junginger & Sangiorgi, 2009; Sangiorgi, 2011). The building planning does not have a legal mandate in user participation as in urban planning. However, with the multi-faceted process of building planning, democratic and communicative approaches can be applied.

4. THEORETICAL PERSPECTIVES OF COLLABORATIVE APPROACHES

In this chapter, diverse collaborative approaches are summarised, and theoretical perspectives are provided. The second section summarises the literature review into a collaboration framework to be used in the case studies and their analysis. The aim of definitions is not to find one definition that remains forever, but one that can be revisited for time to time (Buchanan, 2001).

Thus, this chapter aims is to create clarity in the terms, which can sometimes overlap. Furthermore, the definitions aim to make sense of this complex phenomenon and clarify the possible directions for the future. Hence, one ultimate definition is not the goal but a direction or framework to use for further analysis.

4.1 Approaches for user involvement

Involving users as part of the design process is not a new concept. Companies, architects and cities have always tried to understand their users. Today, user knowledge is becoming a critical competitive edge for companies (Hyysalo, 2009) and cities alike.

Hyysalo and Hyysalo (2018) argues that we have entered the era of participation with a production of ways in which users are involved in projects. These new ways are rooted in participatory modes of working with ties to democratic and even ideological aims (Hyysalo et al., 2019). The new directions for user involvement are stated to be community-led actions which are stemming from the open-source software communities (von Hippel, 2001). Next, the diverse design approaches are defined to comprehend differences between those.

4.1.1 Participatory and communicative design approaches

Participatory design, sometimes called co-design, is an approach to design which involves users in the development of ideas (see, e.g. Sanders & Stappers, 2008; Mattelmäki & Visser, 2011). Sanders and Stappers (2008, p. 6) define co-design as a creative process where people collaboratively create something together. These people do not necessarily have a design background. Additionally, a design researcher or facilitator might support the collaboration (Mattelmäki and Visser, 2011). In short, it is an act of "people designing together" (Sanders, 1999).

However, scholars have noted differences in the participatory modes of working. As mentioned in the earlier chapter, the roots of participatory approach are in the Scandinavian workplace design and the political ideology and democratic decision making (Clarke, 2013; Mattelmäki & Visser, 2011; Papanek, 1971). Scholars state that the participatory process is more about organisational development with an emphasis on informing and lighter on design (See, e.g. Mattelmäki & Visser, 2011). In other words, the participatory design includes people to the process of designing together with political agendas, either hidden or visible.

From a planning perspective, the communicative and participatory processes have a legal mandate when it comes to urban planning in Finland (Finlex, 2000). In this context, the process is about opening up the planning to different opinions and aiming to raise discussions rather than create solutions (Gutmann & Thompson, 2004; Mouffe, 2000). Therefore, the participatory process has democratic and sensemaking dimensions to consider. From this perspective, the participatory design can be seen more from democratic decision-making and individual right to participate.

The next defined approach, user-centred design, differs from a participatory approach by taking especially the users to the process in multiple ways.

4.1.2 User-/human-centred design approach

User-centred design is similarly a development approach that involves users in the development and designing process (ISO, 1999; Rizzo, 2010). In contrary to the participatory approach, the user-centred approach draws information from actual users of a product and uses that information to design products in each stage of the process (Usability Professionals' Association, 2020). It is an iterative practice involving users throughout the process of development (ISO, 1999). The user focus and the iteration of ideas are the two main benefits of a user-centred approach (Rizzo, 2010).

In the book "Users in the product development" Hyysalo (2009) opens up the ideas behind the user information. User-centred planning starts with user research which tells who, how, where and why the product, service, or building is used. Additionally, future research and market

research can take place to find out who the future users might be. In some cases, customer feedback provides the most insightful information into who the customers are, whether they have used the product, space or service, and when and why. Hyysalo (2009) states that sometimes the designer might have already enough knowledge about the environment, and the user information is not needed.

In practice, user-centred design is often used as a synonym with human-centred design. This latter approach shifts the attention to genuine human and ecological needs (Pirinen, 2016). In the International Organization for Standards (ISO, 2019, 3.7, 3.14, 3.11) the term human is used instead of a user. The term human emphasises users at large among all of the possible stakeholders. Users are the ones who interact with the system whereas, stakeholders are part of organisations who have an interest, claim or a right in a system.

A user-centred approach aims to enhance effectiveness and efficiency while improving human well-being, user satisfaction, accessibility and sustainability, in addition to finding solutions to support human health, performance and safety. In short, the aim is to create more usable interactive systems. (ISO, 2010).

Therefore, this approach is about a continual designing process where users are kept in mind all the time. Designing fluctuates with the investigation of users, testing ideas with users and designing ideas together with the users. Sanders (1999) has argued that participatory design is a better version of user-centred design. However, in this study, user-centred design is emphasising the gathering of user knowledge. Additionally, it can be seen as an umbrella term for all of these diverse modes of working.

4.1.3 Collaborative design approach

Collaborative design, also known as co-design or co-creation (see, e.g. Sanders & Stappers, 2008; Mattelmäki & Visser, 2011), is correspondingly an approach to design where users are involved in the process. The participatory design approach is generally tangled with collaborative design approach (Mattelmäki & Visser, 2011). In the paper "Lost in co-x" Mattelmäki and Visser (2011, p.2) clarify co-creation into being a process of users themselves creating new ideas with guidance or

iteratively develop throughout the process. Therefore, whereas participation is an individual right to participate, collaboration is a mode of working together even with several people from different backgrounds.

Collaborative design is stated to have two sides to it. First, it is a process of finding new ways to see a system and share a vision (Thackara, 2005). From a designer's perspective, it calls for preparing, leading and summarising collaborative events (Vaajakallio, 2012). Secondly, it is co-creation, the act of collective creativity with the people involved (Mattelmäki & Visser, 2011). From the designer perspective, it is about creating tools to innovate and collaborate, such as design games (Thackara, 2005; Vaajakallio, 2012). It is a process with creativity and interaction to find ways to share and combine expertise for a shared purpose (Cottam & Leadbeater, 2004).

Collaborative design in building planning is more multifaceted than in other fields due to the multiple stakeholders involved and the lengthy building process period. Botero and Hyysalo (2013) have introduced an extended co-design approach where co-design activities are organised within the communities based on a co-design model by Sanders and Stappers (2008). This long-term planning increases the complexity of the planning processes, and thus, the varied collaborative acts can have elements from all of the different approaches defined in this chapter. Next, the collaborative design is taken to a new level.

4.1.4 Designing for services and transformation design

Over time, service design has become a new way to involve users in planning. Service design can be seen as an approach to design with certain types of methods used. In the recent book “From interior architecture to service design” (2019) the service design professional and service design pioneer in Finland, Jaakko Väänänen, defines service design as a development of services and customer experiences which highlights the experience of an individual. It is about holistic experiences that users have in certain services. It combines design approaches such as user-centred, participatory-, collaborative-, predictive-, contextual -, system-, multi-channel-, visual- and holistic design.

Sangiorgi (2011) states that service design is evolving into the facili-

tation of change in the organizations and communities, which can be defined as transformation design (Burns et al., 2006). Transformation design looks beyond traditional design solutions by designing service offerings, processes, systems or experiences. Furthermore, the typical characteristic of transformation design projects is the aim to change the culture of the company or a system altogether. Therefore, next to the traditional design solutions, the new discipline focuses on having the tools and skills to support the organizational capacity for change.

These reasonably new design approaches combine elements from the previous approaches. One clear distinction of transformation design is that it aims to leave tools for the community to thrive after the design project is done (Burns et al., 2006). Cultural changes with behavioural changes are connected to these aims. Bailey (2012) argues that design capability should be built over time rather than through small projects and interventions (Pirinen, 2016).

User innovation research is taking new directions with more community-driven approaches to design (Hyysalo et al., 2019; von Hippel 2001). These approaches are creating win-win-situations where user communities get to influence and participate into the designing of the service or spaces and simultaneously, the organization gains information from the users (von Hippel, 2005, 2016). To conclude, service design is taking collaborative design to more holistic and systemic levels aiming to transform systems. This calls for a long-term development where users become active participants. Moreover, the new areas of user innovation research could offer solutions for this demand.

4.1.5 Towards strategic co-design

The diverse approaches with similar roots and aims to involve users are easily tangled. To address the problem of proliferating approaches, Hyysalo and his colleagues (Hyysalo & Johnson, 2015-2017) have grouped a large number of methods into groups and co-design approaches, as presented in Figure 7. The four main clusters of approaches are (1) user inspiration; (2) investigation of users; (3) cooperation with users; and (4) active user communities. In the research project´s official website, the approaches are described as follows. The first cluster, user inspiration, makes room for the designers to design and approach users as inspiration. In this cluster, the designer can

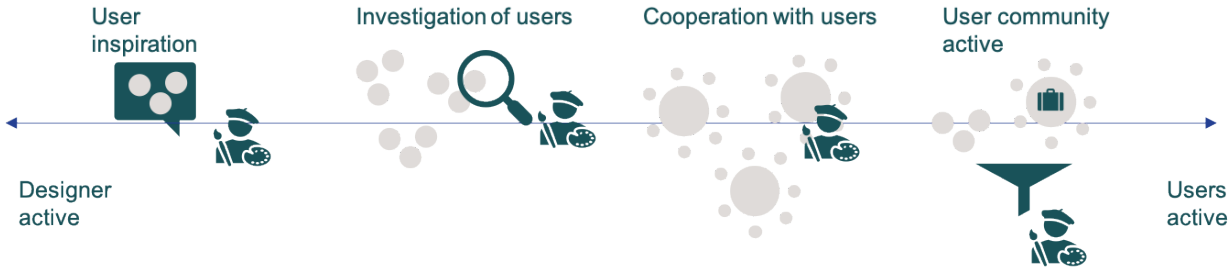


Figure 7. Clusters of approaches connected with modes of working and a participant roles (adopted from Hyysalo & Johnson, 2015-2017).

have enough experience that users are not needed for development. The second cluster, the investigation of users, is connected to the user/human-centred and user experience design with continual processes having users as part of the process in multiple ways. The third cluster, the cooperation with users, includes interactions and exchanges between the designers and users. This cluster includes the co-creative and collaborative design approaches. The final cluster, active user communities, is giving more power to the community and supporting them to design solutions by themselves.

Collaborative design is more than implementing a specific approach with certain methods (Heiskanen et al., 2010). Experience is needed, and strategic questions should be asked about novelty, tools to be used, the arraignments for collaboration and the user types. To achieve transformative and novel ideas demands for strategic use of methods and mixes of methods. In other words, to succeed sustaining these long-term co-design processes calls for experience in the selection of methods. Moreover, these processes need open design strategies where the solutions alternate between designers and users (Botero & Hyysalo, 2013).

4.2 Collaborative design framework

This section summarises the various approaches together with new theories about objectives of design and strategic use of design. Reason for these sections is to create a framework of collaborative design in order to evaluate the three selected cases following. First of all, the framework uses different modes of working when addressing user-centred design processes in the context of architecture and construction. These modes are summarised from the previous sections

into a colour coding system with three modes and colours: (1) no-direct-participation with emphases on user investigation and inspiration; (2) participation with emphases on democratic and communicative acts; and (3) collaboration with emphases on collective creativity and shared expertise.

Second of all, the framework has two axes with different design objectives and highlighting the transformative nature of design today as well as the power design has in making sense of the complexities. Outcomes of more systemic and holistic design processes can be beyond a traditional design solution (Mattelmäki & Visser, 2011). Therefore, the aim is not only in traditional design, but equally, it applies in sensemaking. Some scholars argue that design is in its core about holistic sensemaking (Krippendorff, 1989; 2005).

Knowledge creation during the collaborative processes can be about researching, integrating and interpreting the knowledge created (Verganti, 2009). Based on Verganti's design-driven theory (2008, 2009), designing is about creating innovation of new meanings. These meanings can be about a function or performance, or they can be more abstract like an identity, emotion or symbol (Krippendorff 1989). Therefore, the sensemaking can be about meaning-making during the knowledge creation process.

According to some scholars, the core of design revolves around defining and problem-solving. It is a creative act to innovate and plan solutions for the people´s hopes and needs as well as responding to the challenges of the environment. In other words, it is a holistic way to make sense of the world. It is a natural human behaviour to change the existing situations into preferred ones. (Brown, 2009; Buchanan, 2001; Herbert, 1996; Krippendorff, 1989; 2005). Ultimately this is about changemaking.

Finally, the framework uses the concept of design maturity, which was first employed by the Danish Design centre a communicative model to evaluate the maturity of design used in companies (Danish Design Centre, 2015). They hypothesise that the more strategic use of design can be connected to higher profitability. The strategic use means to design in the centre of development with the emphasis on early devel-

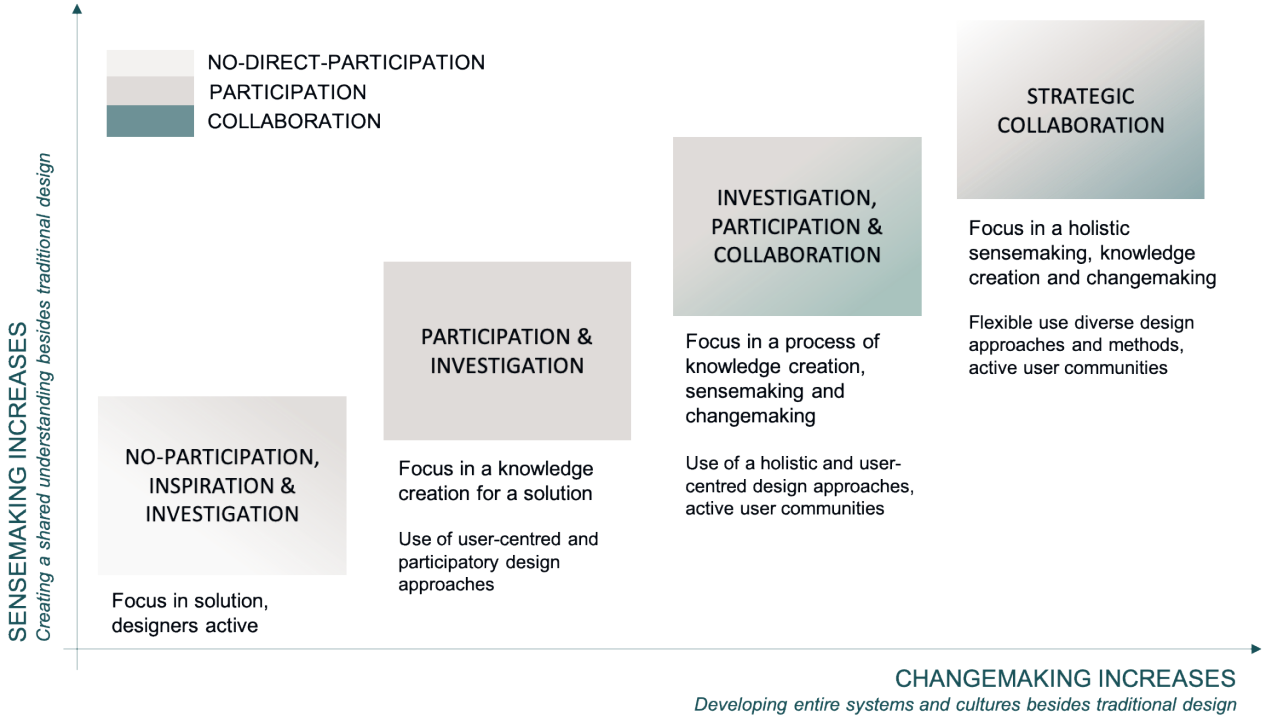


Figure 8. *Collaborative design framework: collaboration maturity based on four stages (Nevari, 2020).*

opment. The four steps are (1) non-design; (2) design as a form-giving; (3) design as a process; and (4) design as a strategy (Danish Design Centre, 2015). The first step implies that non-designers carry out development and that users have little to no involvement. The second step means that design is used traditionally as styling and in collaboration with multiple professionals. The third step dictates that design is not only an outcome but equally a process, and it is implemented from the beginning with multiple people involved, users included. In the fourth step, designers are part of the management, leading the team to think about the concepts holistically. Vision making is connected to the overall strategy; work and solutions are based on these processes. Next, these diverse theoretical perspectives are summarised even further, and the framework introduced based on this section.

4.2.1 Four stages of collaborative design

In order to summarise the literature review for this thesis study, a collaborative design framework is created. In this framework introduced in Figure 8, four stages are starting from no-participation and continuing to the strategic use of approaches and methods.
The first step, no-participation, includes the mode of user inspiration

drawn from the clustering of methods by Hyysalo and his colleagues, see section 4.1.5. The second step, participation and investigation, includes a user-centred approach with aims to collect information and work on the knowledge together with some of the users. Investigations are used to draw information from users to design solutions. The third step, participation and collaboration combined, means that users are involved in the process as participants but additionally, as co-creating designers. The fourth step, strategic collaboration, uses a strategic method selection in conjunction with an active community to enable change both in dimensions of culture and tangible solution. This final step opens up the process beyond the realm of building planning; It can include a process of developing the strategy of the organisation along with the spatial solutions. It uses more holistic and systemic approaches and multidisciplinary teams to design outcomes.

5. RESEARCH OBJECTIVES

This thesis aims to make sense of the complex phenomenon of the user-centred and collaborative design process along with the building process by analysing the activities of three building projects and comparing the findings with the terminology introduced in the literature.

5.1 The research gap

Scholars argue that we are entering "an era of participation" which evokes new ways to involve users (Hyysalo et al., 2016). User involvement is shifting towards more strategic ways with more complex connections within the organizations (see, e.g. Hyysalo and Hyysalo, 2018; Sangiorgi & Junginger, 2009; Sangiorgi, 2011). It can be argued that the collaborative design in this new era goes beyond design aims which affect the idea of design (Hyysalo & Hyysalo, 2018). Additionally, research reveals that collaborative processes tend to have unclear definitions and even overlapping terminology (see, e.g. Mattelmäki & Visser, 2011; Staffans et al., 2019). In other words, the user involvement and collaboration is more critical than ever; however, the information is scattered around different fields with diverse methods to be used.

In Finland, the rise of service design in the context of building planning is topical in the year 2020. The new guidelines surrounding service design in the real estate and building industry (2019) defines service design as an approach to collect user data and to interpret the data with different participatory and observatory methods (Building Information Foundation RTS sr, 2019, p. 1). However, this approach does evoke important questions concerning the extended co-design process and various ways to involve users during that process (Botero & Hyysalo, 2013) with the new design areas. While designing for services is moving towards transformative design and cultural changes in organizations (see, e.g. Burns et al., 2006; Sangiorgi, 2011) user innovation research is focusing on a win-win-situations where user communities get to influence and participate into the designing processes (See, e.g. von Hippel, 2001, 2005, 2016; Hyysalo et al., 2019).

To sum up, more research is needed to understand the types of activities and work needed in this area beyond one-time-projects. Therefore, this research aims to create a holistic understanding of user-centred and collaborative design during the architectural and building planning process. From there, the purpose is to generalize and draw conclusions from somewhat similar extended collaborative processes.

5.2 The research questions

This thesis explores the phenomenon of user-centred and collaborative design during the architectural and building planning process. The multiple case studies explore user involvement and collaboration activities during the building planning process through which it creates an overall view of the complex phenomenon. Through the analysis, both the terminology and how it could be better understood are analysed as well as how it could be more profoundly human-centred. The work provides insights both for practitioners such as designers, architects and builders and for users and city representatives who might be embarking on a similar journey. The phenomenon is studied through the lens of the three following research questions:

Q 1 What levels of action are required to create a user-centred and collaborative building process?

Q 2 How can collaborative design be better understood and described?

Q 3 How could have the process been more profoundly human-centred?

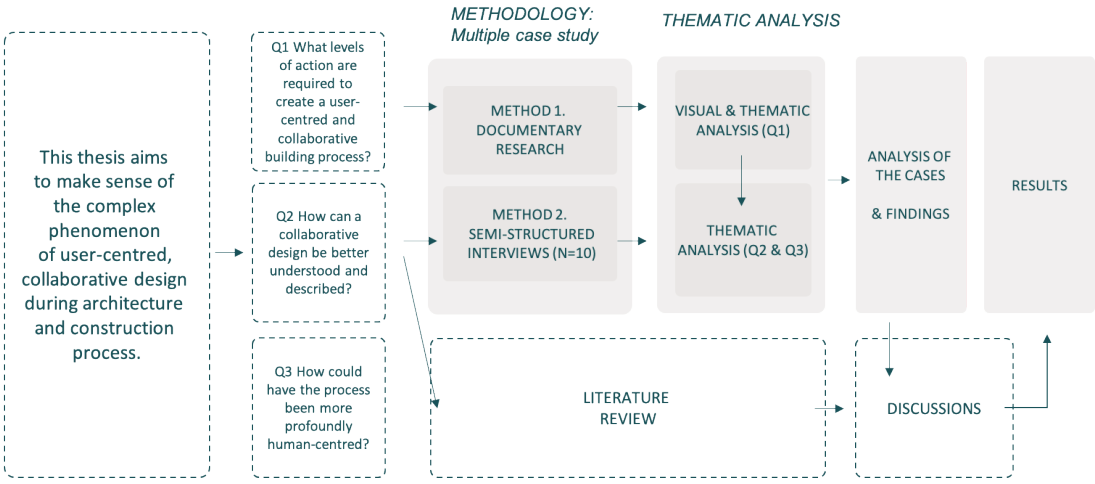
The first question is explored through documentary research and interview analysis of three user-centred building projects. Through those methods, a map of the activities involving users is illustrated. All three cases studied are situated on the same campus of Aalto University. One of the case studies revolved around the renovation of an old building, while the two others involved the process of building entirely new ones.

The second question is explored through the interview analysis and the literature review. The aim of these methods is twofold: Firstly, to focus on understanding the terminology used in user-centred and collaborative design and secondly, to connect the case-studies to the terminology used in the literature.

Finally, the third question is explored through interviews and literature review with reflections on the learning derived from these three cases and the future direction presented by the literature. The next chapter introduces the overall methodology used to answer the research questions.

6. METHODS AND DATA

This chapter introduces the research approaches and methodological choices selected to conduct this research. Methodology guides research, whereas methods support the relevant data collection and creation of an understanding of the research questions (Muratovski, 2016). The last two sections of this chapter introduce critics to the selected methods and ethical considerations for the interview research. The process of data analysis is introduced in the following chapter.



6.1 The research approach

Figure 9. *The research process (Nevari, 2020).*

This research uses a qualitative research approach. The research question aims to understand the phenomenon of user-centred design in the built environment and make sense of the collaborative design within the environment. The complex and evolving phenomenon is best described and evaluated through qualitative research aiming to create a multifaceted and meaningful overview of it (Leedy & Ormrod, 2015; Muratovski, 2016).

Qualitative research approaches have a multitude of frameworks to be used in the research (Muratovski, 2016). This thesis uses a multiple case study as a research framework because it is incredibly beneficial when trying to learn about a phenomenon that develops over time (Leedy & Ormrod, 2015). Based on Yin (2014), a multiple case study aims to look for findings across the cases. Moreover, it enables the investigation of the differences between and within the cases. In this thesis, three different building projects are investigated in order to find patterns and finally, a generalisation of the findings.

The empirical research typically follows four steps: (1) Framing the topic with a preliminary research problem and question; (2) Getting familiar with the topic and defining the scope; (3) Methodology, design issues and theory with literature, starting the research with data collection, analysing the data; and (4) Finally concluding everything and writing it down in a report (Hirsjärvi & Hurme, 2008). This research follows a similar process, introduced in Figure 9.

6.2 Methods for data collection

The qualitative research approach typically includes multiple data sources, and the data is then viewed from different angles (Muratovski, 2016). Firstly, the overall picture of the process will be created through documentary research in this study. In order to use the abundant amount of collected data as a probe for the interviews, it will be compressed into a visualised format. The next part of the research will use face-to-face interviews with semi-structured questions to gain a shared understanding of the topic and evaluate the process with the people who were involved in it. The interviews are an excellent way to highlight the human as a subject, understand the complex, unknown topic, place the discussion part to a broader context, clarify the reasons behind the answers and research even sensitive topics (Hirsjärvi & Hurme, 2008). For this research, the main reason to use semi-structured interviews as a method was to understand the complexity of different levels of action as part of a broader context.

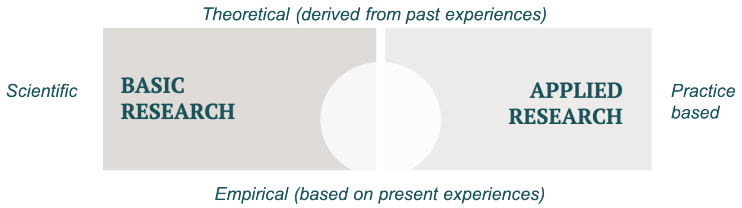


Figure 10. *The scope of the thesis (adopted from Faste & Faste, 2012).*

To conclude, the knowledge created will result in a "study of design" and "design of research" combined (Faste & Faste, 2012), as presented in Figure 10. The research uses a visual mode of thinking as a supplementary tool in the analysis. The data gathering and selection processes of the chosen methods are introduced in more detail in the next chapter.

6.3 Critique of the methods

The most common challenge of a case study is to investigate a topic which is too broad, or that has too many objectives. In this study, it has been a challenge to scope the thesis topic into a manageable entity. This could be avoided with strict parameters of time and activity, time and place or definition and context. Moreover, the multiple-case study can be expensive and time-consuming, which is contradicting with the time dedicated to the thesis work. However, typically the evidence from

the case study is reliable and dependable. (Baxter & Jack, 2008).

Because the interviews were planned to be conducted only once, the data collection was divided into two parts—first, the documentary research with a visual outcome and then aiming to gain deeper insights at the interviews. However, due to the nature of a case study, the data gathered was rich and analysis time consuming, which creates some challenges when it comes to the scope of the thesis.

Finally, it should be remembered that qualitative research can never reach the objective truth (Alasuutari, 2011). Thus, it has to be acknowledged that the findings of this study are suggestive and might create merely a partial overview of the phenomenon.

6.4 Ethical Considerations

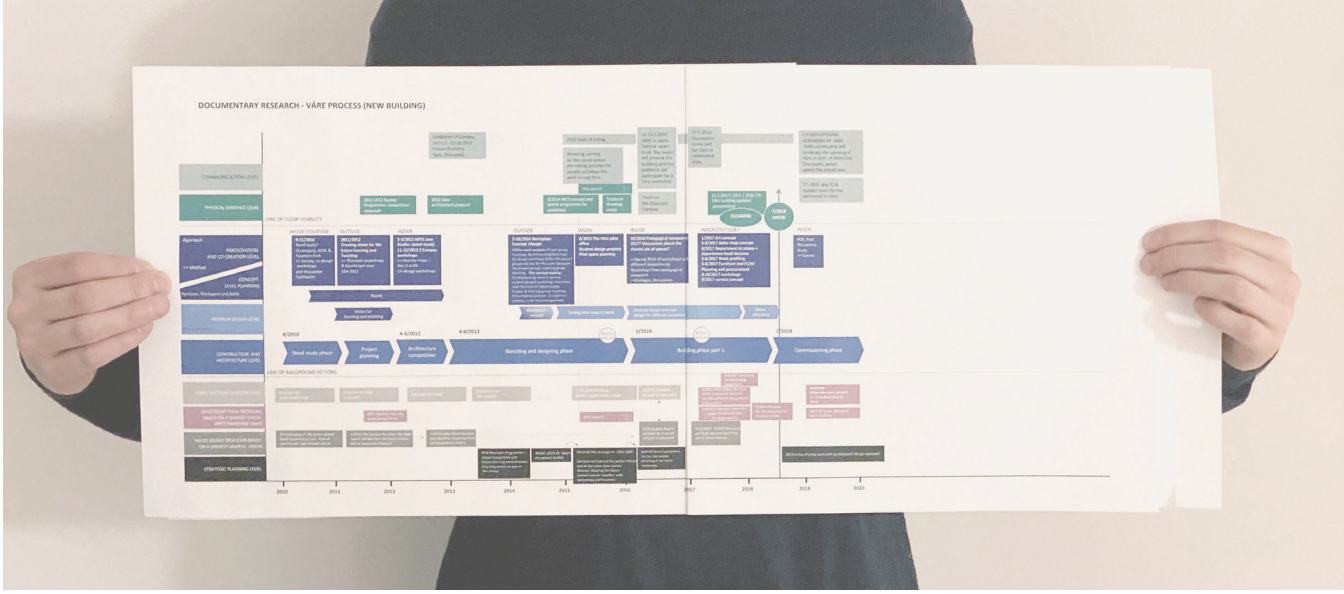
The ethical practices are in place to guide the research process with standards of both academic and professional life. The basic principles within the anthropological association are not to harm, being honest, getting permissions and informing participants of the research, making the results accessible, protecting records and maintaining professional relationships (American Anthropological Association, 2020).

This thesis follows these ethical and legal practices. The interview participants participated voluntarily; they signed a consent form after learning more about the research. In the consent form, it was agreed that the anonymous transcripts could be used with a fellow researcher for further research if needed. The participants are entitled to access their information at any time while the transcripts are stored.

Additionally, the information about the interview participants was handled with confidence. Only the interviewer had access to the audiotape. Signed consent forms and original audio recordings were stored in a hard drive until the confirmation of the masters' degree. All information was coded and anonymised to ensure ethical practice. The roles of the interviewees are generalised to ensure the anonymisation. Once the transcript was completed and checked by the interviewer for accuracy, the audiotape was erased within two months. The transcripts of the interviews will be retained for two to five years.

7. DATA AND ANALYSIS

This chapter focuses on creating a detailed description of the data collecting and analysing phases. As explained in the previous chapter, the data was collected through documentary research and semi-structured interviews. The data were analysed in three stages: First, the documentary research was conducted following by the analysis of various activities. Second, the semi-structured interviews were conducted and analysed with a thematic approach. Finally, the research questions were re-iterated, followed by an iteration of thematic analysis. These phases are described in more detail in this chapter.



7.1 Documentary research

Image 1. *A first draft of the service blueprint as a printed version for the interviews.*

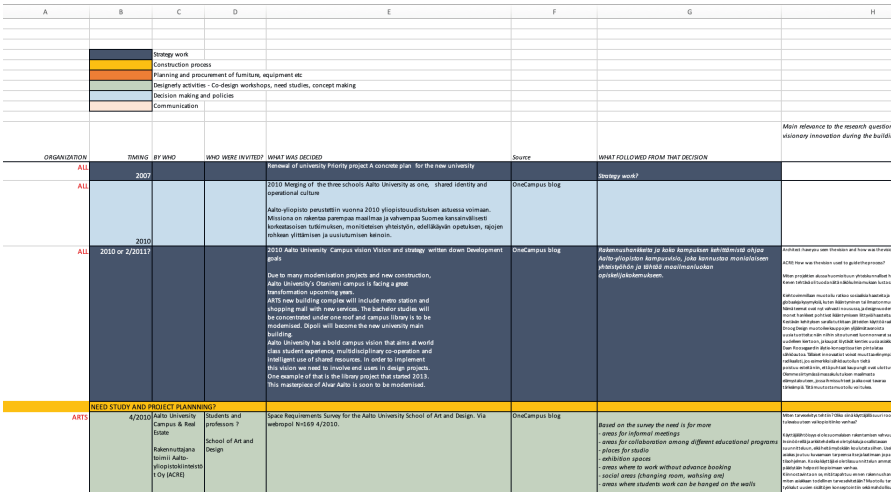
The data for documentary research was gained from multiple sources introduced in Table 1. The first task was to select relevant and available documents. These came in the form of administrative documents; such as annual and final design reports as well as other development projects. Additionally, the documents included archival records to understand the possible impact of the process, service records of the development projects; organisational records and survey results of the cases that were collected. Some of the data was added after the interviews, including the post-occupancy surveys of two of the cases.

The selection of documents began with an Internet search for design projects and building-related project planning reports. The material from Aalto University strategy and communications, such as campus magazine, helped to create an overall picture of the three cases. The project reports and blog-posts helped to create a timeline of different actions. The interviews opened up access to the missing reports. Thus, the iteration of maps with facts happened after the interviews.

After collecting the data, the analysis was done in three steps. First, the data from the documentary research was clustered into actions following a chronological timeline with six columns: (1) organisation; (2) timing; (3) by who; (4) who was involved; (5) what was decided; and (6) what followed from that decision. See, Image 2. The template was created as the information was collected. As the Image 1, presents the information was compressed into a visual format which was appli-

cation of a service design tool. The service blueprint is a service design technique that serves to specify and create a detailed understanding of the front stage and a behind the scenes service process (Stickdorn & Schneider, 2013). In short, this technique describes the elements in the service process. The use of this form of visualisation supported the aim to outline the actions that took place. The idea was to create a visual hierarchy of these actions. This analysis approach helped to organise the notes while going through the data.

The first phase of the analysis helped to create the interview protocol with questions, see Appendix 1 for the detailed questions. The visualised map was evaluated further in the interviews.



Strategy work
Construction process
Planning and procurement of furniture, equipment etc
Designerly activities - Co-design workshops, need studies, concept making
Decision making and policies
Communication

ORGANIZATION	TIMING	BY WHO	WHO WERE INVITED?	WHAT WAS DECIDED	Source	WHAT FOLLOWED FROM THAT DECISION	Main relevance to the research question visionary innovation during the buildi
ALL	2007			Renewal of university Priority project A concrete plan for the new university		Strategy work?	
ALL	2010			2010 Merging of the three schools Aalto University as one; shared identity and operational culture Aalto-yliopisto perustettiin vuonna 2010 yliopistouudistuksen aiheuttaman. Missiona on rakentaa parempaa maailmaa ja vahvempaa Suomea kansainvälisesti korkeatasoisen tutkimuksen, monitieteisen yhteistyön, edistäkäyvän opetuksen, rajojen rohkean ylittämisen ja uusiutumisen kelnoin.	OneCampus blog		
ALL	2010 or 2/2011?			2010 Aalto University Campus vision Vision and strategy written down Development goals Due to many modernisation projects and new construction, Aalto University's Otaniemi campus is facing a great transformation upcoming years. ARTS new building complex will include metro station and shopping mall with new services. The bachelor studies will be concentrated under one roof and campus library is to be modernised. Dipoli will become the new university main building. Aalto University has a bold campus vision that aims at world class student experience, multidisciplinary co-operation and intelligent use of shared resources. In order to implement this vision we need to involve end users in design projects. One example of that is the library project that started 2013. This masterpiece of Alvar Aalto is soon to be modernised.	OneCampus blog	*Rakennushankkeita ja koko kampuksen kehittämistä ohjaa Aalto-yliopiston kampusvisio, joka konnustaa monialaisen yhteistyöhön ja tähtää maailmanluokan opiskelijakokemukseen.*	
NEED STUDY AND PROJECT PLANNING?							
ARTS	4/2010	Aalto University Campus & Real Estate Rakennuttajana toimii Aalto-yliopistokiinteistö t Oy (ACRE)	Students and professors ? School of Art and Design	Space Requirements Survey for the Aalto University School of Art and Design. Via webropol N=169 4/2010.	OneCampus blog	Based on the survey the need is for more - areas for informal meetings - areas for collaboration among different educational programs - places for studio - exhibition spaces - areas where to work without advance booking - social areas (changing room, wahsing ene) - areas where students work can be hanged on the walls	

Image 2. *A print screen from the documentary research phase where all of the data was collected into one excel sheet.*

Table 1. *The documents studied for the documentary research.*

The reports and documents studied:

Aalto University, campus level	Case: Väre Building	Case: BIZ Building	Case: LeC Building
1. Andrew Harrison Spatial review, Campus vision report from 2012 2. Summary report for spatial use in work, learning and research environments 2016 3. Aalto University strategy report of 2016-2020, annual report of 2017 4. The annual campus magazine of 2018 5. Overview of the pilot-spaces in Aalto University	1. Aalto University new building, a project plan with attachments from 2014 2. ARTS workplace development project final report, Office concept 2014 3. ARTS Studio concept summary, 2014 4. The spatial programme, 2014 5. Spatial information cards about the workshops, 2014 6. Aalto University new building Architecture competition programme 2015 7. One Campus -blog and multiple presentation documents there, written in 2015-2018 8. The final report from One Campus - a project by Sari Dhima 17.12.2018 9. POE Results by ACRE 16.4.2019	1. BIZ Identity development design procurement material in 2017 2. BIZ summary report of the overall process 2020 3. POE Results by ACRE 22.1.2020	1. The yearly outlooks of Libraries 2012-13 2. The project plan for the renovation of Campus Library, 27.03.2014 3. The final report of the service design project. 4. Aalto University learning centre service spatial concept 15.1.2014 5. The overview of the learning centre participation by ACRE

7.1.1 Documentary research findings and limitations

The main findings from this phase were the different activities found and clustered into levels of action. These were found by categorising the various procedures into six themes: (1) Strategy work; (2) Construction process; (3) Planning and procurement of furniture and equipment; (4) Designerly activities, such as co-design workshops, need studies, and concept making (with workplace or service design angles); (5) Decision making and policies; (6) Communication. Image 2 introduces these categories with a colour coding system used for documentary research. At first, several levels of action were identified (see above), which were later simplified to three primary levels.

As mentioned, the structure of the visualisation adopts the technique of service blueprint. Because the data was diverse and in need of being framed for the later use, this technique was used. Following the idea of the service blueprint, the levels of action were visualised with a line of evidence, the actual planning process and the background actions. The use of visualisations during the research process is uncommon, and thus, it creates a new dimension for this thesis work.

The limitation of this work relates to the time it took to find all of the possible activities that happened during the four to ten-year timespan. Additionally, it is essential to note that access to the documents was limited in some cases. The case of BIZ, for example, had project reports in the form of a website but it had crashed just before this study and the information was not available. However, the summary of the process was nevertheless received from the interviewee. The effort needed to find and access sufficient information took time away from the analysis.

7.2 Semi-structured interviews

After the documentary research, the second phase of data collection began with face-to-face, semi-structured interviews which aimed to gain a shared understanding of the topic and evaluate the processes with the people who were involved in them.

	CASE VÄRE	CASE BIZ	CASE LeC
INSIDE the organization, project´s user representative or consulting specialist	Interview 1. Väre, inside 1.	Interview 4. BIZ, inside 1.	Interview 8. LeC, inside 1.
	Interview 2. Väre, inside 2.	Interview 5. * BIZ, inside 2.	*Interview 5.** LeC, inside 2.
OUTSIDE the organization, designer, interior architect or architect	Interview 3. (2 people) ** Väre, outside 1.	*Interview 3.* ** BIZ, outside 1.	Interview 9. LeC, outside 1.
		Interview 6. *** BIZ, outside 2.	*Interview 6.**** LeC, outside 2.
		Interview 7. BIZ, outside 3.	

*Same person connected to the cases of BIZ and Väre / ** Same people connected to the cases of BIZ and LeC

Table 2. *A table of interviewed people and their role in the three different cases.*

The key people were recognised during the first stage of analysis. From there, the author selected interviewees from two different perspectives. (1) The people from inside the organisation, and (2) the services bought from outside the organisation. All of the selected interviewees are considered having a critical role in the processes, having roles either in managing the process and consulting or designing the actual solutions. Altogether nine face-to-face interviews were held with ten people (n=10). Eight of them were done with one person and one of them with two people. Two to three people were always connected to one case. In some of the interviews, one person represented two cases at the same time. These are marked in Table 2. The names of the interviewees are removed to ensure anonymity. Instead, the interviewed people are referred to as the name of the case and the inside or outside role.

The interview protocol, which was completed after the documentary research, had different questions grouped under specific themes. The interviews followed a semi-structured interview method. The questions guided the interview; however, depending on the interviewee, the discussions had diverse follow up questions to gain the best possible outcome. The interview protocols can be found in Appendices (see Appendix 1 and 2).

The general structure and themes for the interviews were:

- Background and definitions of design
- The documentation of the building processes/ess
- The collaboration and participation plan
- The learnings from the user involvement/collaboration

The interviews were recorded and partially videotaped to ensure the quality of the data. The participants were asked to sign the consent form for the recordings and the storing of the data.

Image 3. Picture from the interviews with the tools used to ensure the quality of the data.

The analysis of the interviews aimed to create a structured interpretation process. To do that the interview analysis was done following the main principles from thematic analysis which identifies patterns (themes) within the rich data. (Leedy & Ormrod, 2013). Thematic analysis typically starts with familiarisation and transcription of the verbal data. From there, it continues with a generalisation of initial codes, searching for themes and then reviewing the themes found. Finally, names the themes are defined, concluding with the production of the report. (Braun & Clarke, 2006).

The first phases, (1&2), were done by transcribing the data from the audiotapes. While writing, notes were taken, and the visualised process maps were further developed. Step three was done by going through the transcripts one by one and looking for reoccurring themes and patterns with the research programme Atlas.io, as introduced in Image 4. Somewhat similar coding can be done with either a theoretical or inductive approach (Braun & Clarke, 2006). The analysis began with a more theoretical approach in order to answer the research question. However, the research questions were iterated during the data analysis, which created fluctuation between the inductive and theoretical approach. The aim was to find superficial, overarching themes within the three cases.

The fourth step, the reviewing of themes, took place partially during phase three. While coding the transcripts, the code-system was developed to create sub-themes and main categories. In other words, after the first coded transcript, the themes were organised to avoid an endless list of codes. The additional themes were added during the next coding sessions. Once all of the transcripts were read once, the code

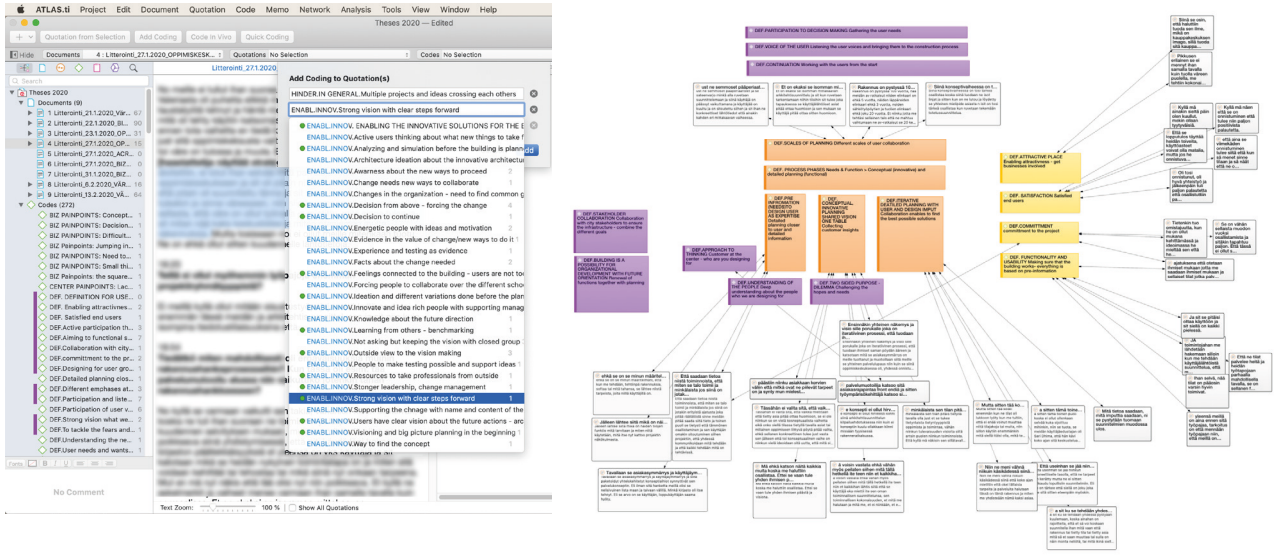


Image 4. Print screens from the analysis of the interviews with the programme Atlas.io.

system was re-iterated. All the duplicated codes under different themes were checked and rearranged, which created the next cycle of categorising of the codes.

The codes were divided into four main themes of definitions with multiple subcategories. These themes and subcategories included the definitions of user-centred design and the enabling of elements in the user-centred and collaborative design process. This process encompassed eight subcategories: (1) enabling elements for change; (2) innovation; (3) function; (4) satisfaction; (5)collaboration; (6) identity; (7) set goals; and (8) general. Additionally, hindering elements were gathered under the same subcategories. The value of design and pain points in the different cases were coded into the separate theme as well. From there, networks of the themes were created to see the connections between different themes (see Image 4). The first draft of the findings was written from these themes. The research questions were then re-iterated, starting the last analysis phase with defining and naming the themes based on the reframed research questions.

7.2.1 Iteration of the research questions

After the first draft of the findings was written down based on the thematic analysis described above, the research questions were iterated into the final form, described in chapter 5. The iterated research questions were used as a new lens to create an overview of the themes

and subcategories found in the last phase of the analysis, as summarised in Table 3. At this point, the value of design, the hindering and enabling elements, pain points of themes were left aside, and the focus was redirected towards the research questions. The first research question was mainly following the findings based on simplified visual maps. The two other research questions were connected to the iterated coding-system in the programme Atlas.io. From here, the findings were written, see chapter 9.

7.2.2 Interview research findings and limitations

The findings from the interviews increased the understanding of the phenomenon in general. The interviews clarified the levels of action, with the elements creating a collaborative process as well as providing insight into how to create an even more profoundly human-centred process.

The visualised maps were further developed based on the discussions with interview participants. The visualisations were throughout the

Table 3. *Re-iterated themes based on the final research questions.*

Q2. How can a collaborative design be better understood and described?		
THEME 1. MULTIPLE DEFINITIONS / REASONS TO INVOLVE USERS	THEME 2. DIFFERENT PHASES FOR THE PLANNING (8 codes)	THEME 3. DIFFERENT USER ROLES
1. Participation to decision making (12 codes) 2. Conceptual, innovative planning shared vision (8 codes) 3. Voice of the user (8 codes) 4. Iterative detailed planning (7 codes) 5. Pre information (needs) (7 codes) 6. Functionality and usability (6 codes) 7. Satisfaction (5 codes) 8. Approach to thinking (5 codes) 9. Two-sided purpose - dilemma (5 codes) 10. Understanding of the people (5 codes) 11. Building is a possibility for organizational development (5 codes) 12. Continuation (5 codes) 13. Scales of planning (5 codes) 14. Commitment (4 codes) 15. Stakeholder collaboration (2 codes) 16. Attractive place (2 codes)	1. SUB-THEME 1. VISIONING 1. Creating shared vision for the change (11 codes) 2. Clear vision with right timing (11 codes) 3. Potential of organizational development next to it all (5 codes) 2. SUB-THEME 2. COCNEPTUAL VISIONING WITHOUT WALLS 1. First vision then building - early participation (9 codes) 2. Focus in the functions (future orientation instead of architecture (6 codes) 3. Sub-theme 3. the concept to the space 4. Orientation and creative design to implement the vision to a building (10 codes) 3. SUB-THEME 4. DETAILED PLANNING 1. Participation to the iterative planning inside constrains (6 codes) 2. Resources for detailed interior planning (small scale designing) (5 codes)	1. SUB-THEME 1. USER AS EXPERTS 1. Involving users as experts of their activities (3 codes) 2. Sub-theme 2. user active 3. Active and committed users creating vision and taking vision forward (9 codes) 4. Commitment through participation (4 codes) 2. SUB-THEME 3. USER KNOWLEDGE 1. Understanding of the stakeholders and enough different perspectives (5 codes) 2. Understanding the users even silent user needs (7 codes) 3. SUB-THEME 4. USERS AS INNOVATORS 1. Managing the collaboration with many different people - multi-voiced ideas (5 codes)

Q 3. How could have the process been more profoundly human-centred?			
THEME 1. FOCUS EARLY ON THE FUTURE VISION	THEME 2. GUIDING THE CHANGE	THEME 3. PLAN THE PROCESS CAREFULLY	THEME 4. BRINGING EMPATHY TO THE COMMUNICATION
1. Creating shared vision for the change (11 codes) 2. Clear vision with right timing (11 codes) 3. Potential of organizational development next to it all (5 codes) 4. Understanding the organizational situation (4 codes) 5. Communicating the vision and work done (5 codes)	1. Decision from above to "force" the change (7 codes) 2. Guiding to the "right" direction with design challenging users (15 codes) 3. Potential of organizational development next to it all (5 codes)	1. Help from outside professionals (6 codes) 2. Enough knowledge about new approaches / using outside professionals (13 codes) 3. Enough change management for the new ways to work (5 codes) 4. Methods different ways to collaborate with structure (8 codes) 5. Creating excitement and brand inside project next to changes (5 codes)	1. Listening people, being present - informal communication (5 codes) 2. Ownership and feeling of space (7 codes) 3. Commitment and minimal turnover of people (7 codes) 4. Open communication both ways and clear argumentation (11 codes) 5. Collaboration works between the different parties involved (5 codes)

process a vital learning tool to comprehend the phenomenon. After the interviews, the campus vision activities at the strategic level was separated into an individual map. The division was necessary, as it seemed that the campus planning was bringing insights to the building process but was not necessarily a part of the process. Overall, the development of the process maps provided valuable perceptions into the patterns and opportunities in, how to create an even more profoundly human-centred process.

The critical insight from the levels of action and various reasons to involve users in the planning raised the question of the typical modes of working or acts of collaborative design. These were further developed after the interviews, and the maps of the processes were colour coded based on that insight, see chapter 8.

One of the most valuable pieces of information gained from the interviews was the concept of different scales of the planning process with even two contradicting aims of user involvement. The other valuable insight was that service design supports future visioning, whereas the traditional planning process supports the discussion over the square meters and cost-efficiency. These findings formulated the second research question, that of how to understand the collaborative design better.

It is important to note that the interviews were done once and lasted a maximum of one hour. In processes as long as these cases were, the memorising of multiple actions and roles of the multiple people involved can create gaps in the information gained. The visualised maps are based on the knowledge gained and interpreted by the author. Thus, they do not represent the entirety of the truth. Additionally, the number of interview participants and interview rounds were limited due to the scope of the thesis. In future research, the broader perspective with additional interview rounds could bring new insights to the findings of the cases.

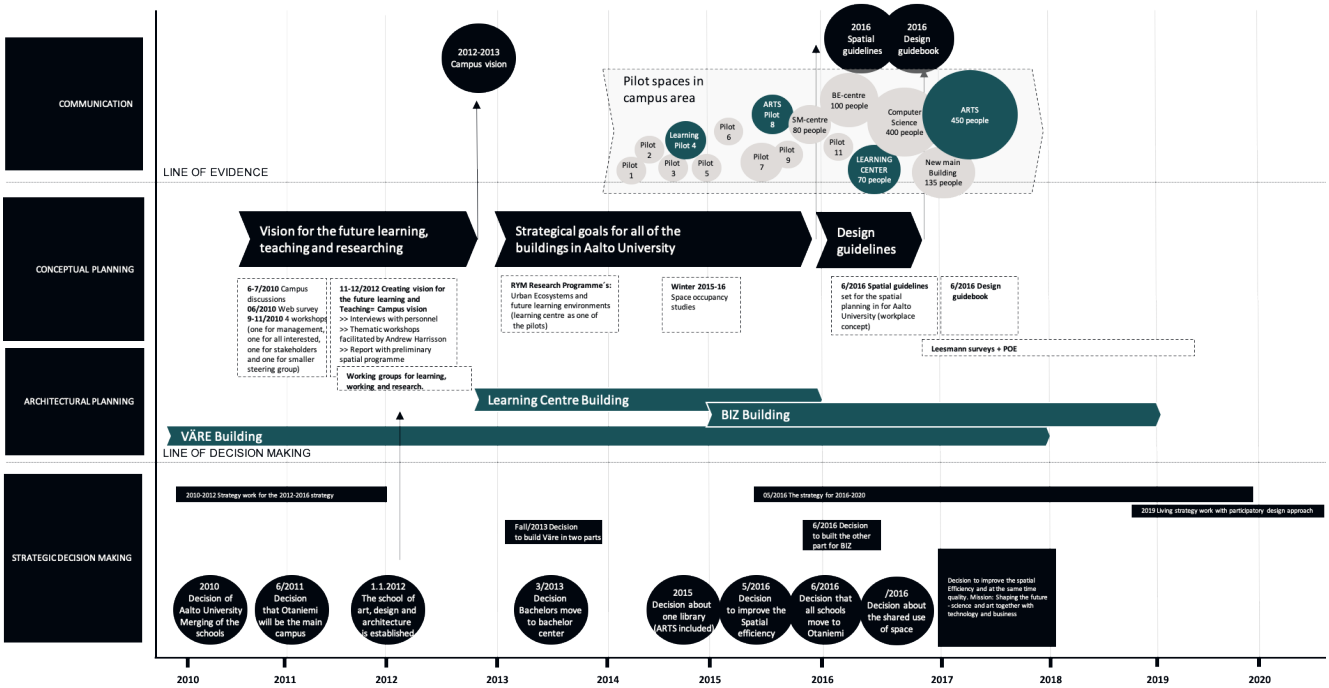
Image 5. *Picture from an interview with the visualised process map on the table.*

8. MULTIPLE CASE STUDY

This chapter presents the three cases selected and creates an overview of the building planning processes as they were. Including the visualised overview, this chapter presents the findings from the research and addresses the first two questions. It first focuses on the various activities happening during the process and then on the collaborative acts combining the literature review with the case study. The collaborative design framework, created in chapter 4, is used as a lens to analyse the cases.

The data was gathered both from documentary research and nine semi-structured interviews with ten interviewees (n=10). The data analysis was done in a visual format using the service blueprint as a tool for visualisations. While the documentary research helped to understand the different activities done during the building planning process, the use of blueprint helped to frame different activities during the process. The data collection and treatment of data is explained in more detail in chapters 6-7.

Figure 11. *A visualised map of the campus level planning and development with connections to the three cases studied (Nevari, 2020).*



8.1 Background: Aalto University's campus

Aalto University combines six schools into one umbrella. The decision to relocate all of the schools to one campus area was made in 2010. The schools continued their everyday practices as they had before the merger until finally moving into the shared campus. The board of Aalto has been working together to create a campus vision, as introduced in Figure 11. Each of the cases studied has some connection to that strategic work. However, it was not clear for the interviewees, which activities belonged to the campus vision and which to the building planning. Thus, in this section, the campus level vision making is clarified as a separate process based on the perception of the author.

Inevitably, the decisions done at a strategic level have affected the building projects. From an objective perspective, it seems that a bigger picture of campus visioning took place simultaneously with several building projects in the campus area. Therefore, the campus vision and strategy work are visualised into a map, separated from the activities connected directly to the cases. That being said, some of the interviewees described activities from the campus vision process as activities performed during the building planning. Next, the activities are described case by case. All of the visualisations are based on documentary research and interview analysis.

8.2 Case: Väre Building

Before moving to Otaniemi campus area, the school of Arts, Design and Architecture (later referred to as Väre) was located in an ambient, old factory in Arabia, Helsinki. The building had some indoor air quality issues, which led to the need for new possible locations. The timeline dates back to 2010 when the Aalto board decided to locate the different schools into one campus. During the planning, many organisational changes were present due to the merging of three schools into one. One example is the move of the School of Architecture under the School of Arts and Design. This change created new demands for the needs and hopes of the users after the project was already underway.

The building Väre was ready in 2018. However, the user-centred process continued until 2019. The entire process of the building took eight to ten years. A preliminary goal was that the building would have been ready in 2016. Based on the interviews, three primary reasons for the delay were identified. Firstly, the decision to place the campus at Otaniemi was postponed by one year, from 2010 to 2011. Secondly, the architecture competition took longer than initially thought. Thirdly, the decision to place the School of Business next to Väre along with the board´s decision to create more efficient spatial solutions created a need to redesign the interior layouts. In the end, the building was built in two parts, first Väre and then BIZ.

In this case, the design professionals included the winning architect office, interior architects from the same office and additional, workplace specialists to support the concept creation. This case did not have separate interior or service design projects but internal development projects instead. Additionally, an external expert was involved in the project planning and architecture competition phases with a task to create a spatial programme of the building. The expert did not have a design background but is still worth mentioning due to the importance of the spatial programme in the result. The internal development projects relied heavily on user representatives from the school with interior architecture and architecture backgrounds. Next, the various activities are further examined as they occurred based on the documentary research and interviews wherein the process maps were evaluated.

8.2.1 Activities creating a user-centred building planning process

Based on the analysis process, several activities were identified, which were further compressed into three primary levels of action: communication and documentation, functional planning and decision-making. Figure 12 illustrates the activities as they happened.

The journey of case Väre seems to start with the campus vision activities with participatory and collaborative events, described in more detail in Figure 11. The result of this phase was a campus report with research from the different schools. These documents are placed on the level of documentation as evidence from this visioning process. The entire architecture and the building planning process can be roughly divided

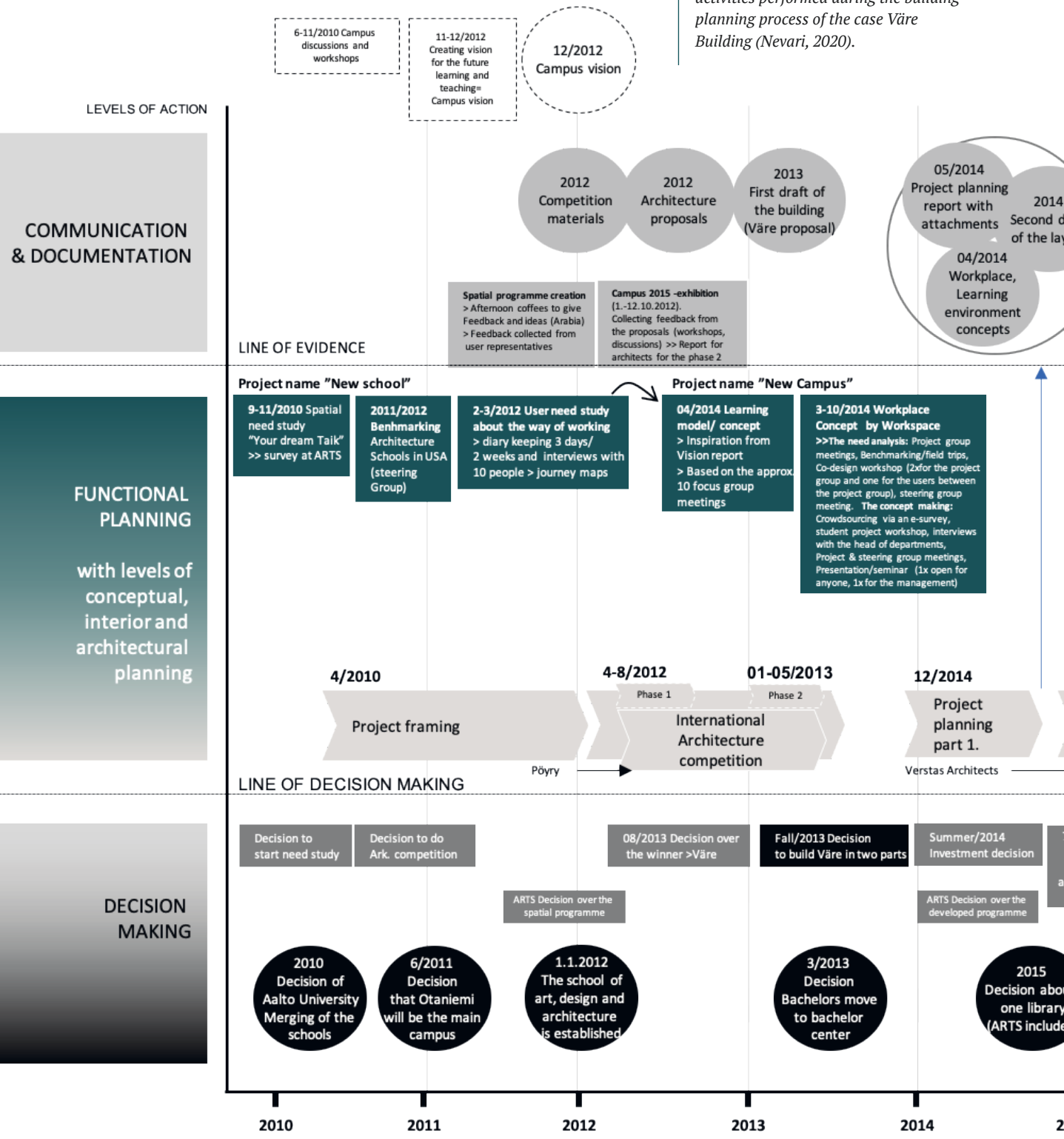
into project planning, actual planning and construction, and commissioning phases following the typical building planning process. These phases create the “skeleton” for the various complementary activities.

In figure 12, the top part illustrates the importance of communication and documentation as evidence from the entire process. This level is visible for the people involved. This level included planning materials such as architecture competition materials with a preliminary spatial programme, architectural drawings of the building with presentations of spatial allocation done for co-design workshops by the user representatives. Additionally, this level included events with informing objectives such as a blog dedicated to the construction phase, Aalto festivals with information about the new building and approximately 70 tours done at the construction site.

The middle part of the process map illustrates the level of functional planning with three areas of planning: (1) Conceptual planning (dark green colour); (2) Interior (light green colour) planning and; (3) Architectural (colour beige) planning. The conceptual planning had three separate phases during the planning, each with different project names. The first project was called “New school”. This phase included a preliminary understanding of the needs of the people working in the school of Arts and Design. The second project was called “New Campus”. This phase included the learning environment modelling with spatial typologies based on the Campus vision, and the study of needs collected in the earlier phases. The third project was called “Väre: One Campus” with two parts. The first part included working environment development which was done through a participatory and collaborative process with the help of external specialists. This work influenced the room programme and other project planning documents. The second part of this phase was the detailed planning with user groups. This phase incorporated the implementation of the workplace concept while discussing the spatial distributions with the personnel. After moving in, a fourth project called “Make Väre ours” was launched. This phase included changes to the spaces based on the feedback they received.

The decision-making processes had two separate functions: (1) the campus-level decisions stemming from the strategy work; and (2) the organisation´s decision-making processes to take the planning forward.

Figure 12. *A visualisation of the activities performed during the building planning process of the case Väre Building (Nevari, 2020).*



Note for the reader: The complete visualisation can be discovered in Appendix 3.

8.2.2 Evaluation of the collaborative process

The Real estate owner conducted a post-occupancy evaluation survey to evaluate the process as a whole and the functionality of the new study and work environment. In the Väre case, on average, 28,5% (N=197) of all the respondents felt that they had excellent opportunities to participate in the planning (30,1% personnel, and 22,2% students). On average, 38,9 % of the respondents felt that the communication worked excellently in the project (42,2% personnel, and 29% students).

Considering the responses mentioned above and the interview analysis, the measurement of the success of the project is complicated. The users felt that they did not have enough possibilities to influence the spatial solutions even though multiple workshops were held throughout the years. Furthermore, "Make Väre ours" project initiated soon after the building was completed. According to the interviews, however, the user-centred process was nevertheless seen as successful. The flexible spatial solutions that were at least one clear evidence of the success as it had been a goal from the start.

In Figure 13, various activities are colour coded based on the three modes of working introduced in chapter 4. The colour coding is three-fold and indicates whether the mode of working was more without direct participation (e.g. investigation or informing), more participative or more collaborative. The beginning of the process can be argued to be more investigative and participatory in nature, whereas the planning phase was collaborative with less investigative elements. The inves-

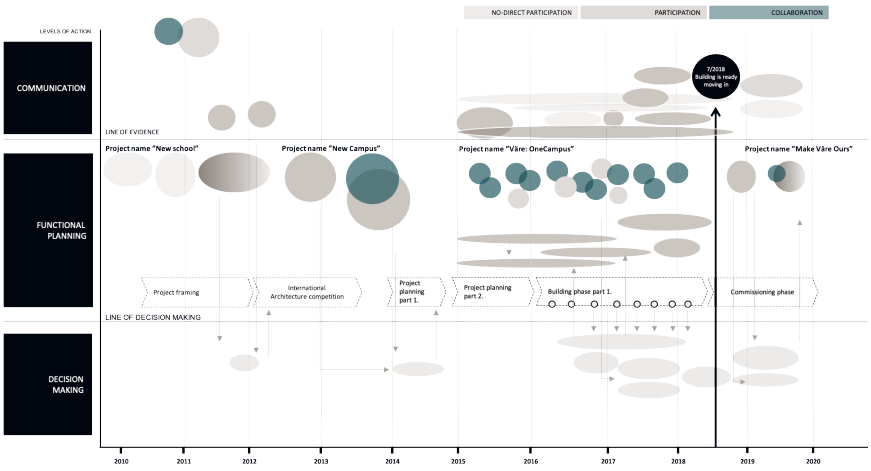


Figure 13. *Analysis of the modes of collaborative acts during the process (Nevari, 2020).*

tigative elements combined with the informing elements were utilised to understand the way of working, learn the ideal practices elsewhere and to create journey maps based on the data gathered. Methods such as surveys, interviews, benchmarking visits were used. The learning environment and workplace development were participatory with some collaborative elements. With either multiple people or a smaller focus group, the ideas were conceptualised into spatial typologies. The typologies were then used in the spatial programme by the external specialist. This phase was neither collaborative nor participatory. A detailed description of how the workshops during planning were conducted is unclear and beyond the scope of this thesis; however, it seems that they were more collaborative rather than participative. The user representatives held several meetings with the selected user groups to develop architectural plans to move forward. Some user groups were met less than others. Few workshops were organised for students as well, but it proved to be challenging to motivate them to participate in these collaborative events.

To conclude, the case Väre has been multifaceted due to the length of the process. Overall, users have been extensively involved; however, the design projects were not structured in the same extent as in two other cases.

8.3 Case: BIZ Building

Before moving to the Otaniemi campus area, the School of Business (later referred to as BIZ) was located in the city centre in Töölö, Helsinki. The building was designed by the well-known Finnish architect Alvar Aalto, and thus, it is culturally and historically relevant. The community was used to the proximity of multiple bars and restaurants due to its central location. These geographic elements help to create the building and school's identity.

The process of BIZ started around 2015 with the idea that BIZ could move next to the school of Arts, Design and Architecture. Even though the decision of the shared location was known, the move came as a surprise for many. Based on the interviews, the start of the process was difficult due to many reasons. The need to move and plan the building was very sudden and was required to be done swiftly. This

made the relocation under the one brand of Aalto University very real, very fast. Furthermore, the most significant challenge was that the location of the campus was utterly different from the vibrant and trendy city centre that students and faculty were used.

The user-centred planning and moving process took four years. However, the architectural planning was far along when the user process started and thus, the architectural solutions followed the same guidelines set in the Väre process. The design professionals in the of case BIZ included service designers in the project planning phase, interior architects in the construction phase and the same architects as in Väre, from the beginning to the end. Additionally, workplace specialists were involved. The user representatives had a background in management, not in design as they were in Väre. In the following section, the varied activities are expanded upon as they occurred based on the documentary research and interviews where the maps of actions were evaluated.

8.3.1 Activities creating a user-centred building planning process

Based on the analysis process, several activities were identified, which were further compressed into three primary levels of action: communication and documentation, functional planning and decision-making. Figure 14 illustrates the activities as they happened. Based on the interviews, the business school did not feel connected to the campus vision process in the same way as in the case of Väre. This can be due to many reasons; however, one apparent reason is the rather late decision to move to Otaniemi, Espoo.

The entire architecture and the building planning process can be roughly divided into project planning, actual planning and construction, and commissioning phases following the typical building planning process. These phases create the “skeleton” for the various complementary activities. In figure 14, the top part illustrates the importance of communication and documentation as evidence from the entire process. This level is visible for the people involved. This level included the first drafts of the architectural drawings, the vision and brand concept and the interior design concept based on the brand concept. All of these conceptual projects improved architectural and interior plans. During the planning stages, multiple focus groups were utilized. They helped to guide decisions concerning spatial planning, art, and moving in -groups. This allowed for the planning process to be open for multiple people. Additionally, the interior architects were invited to informing events

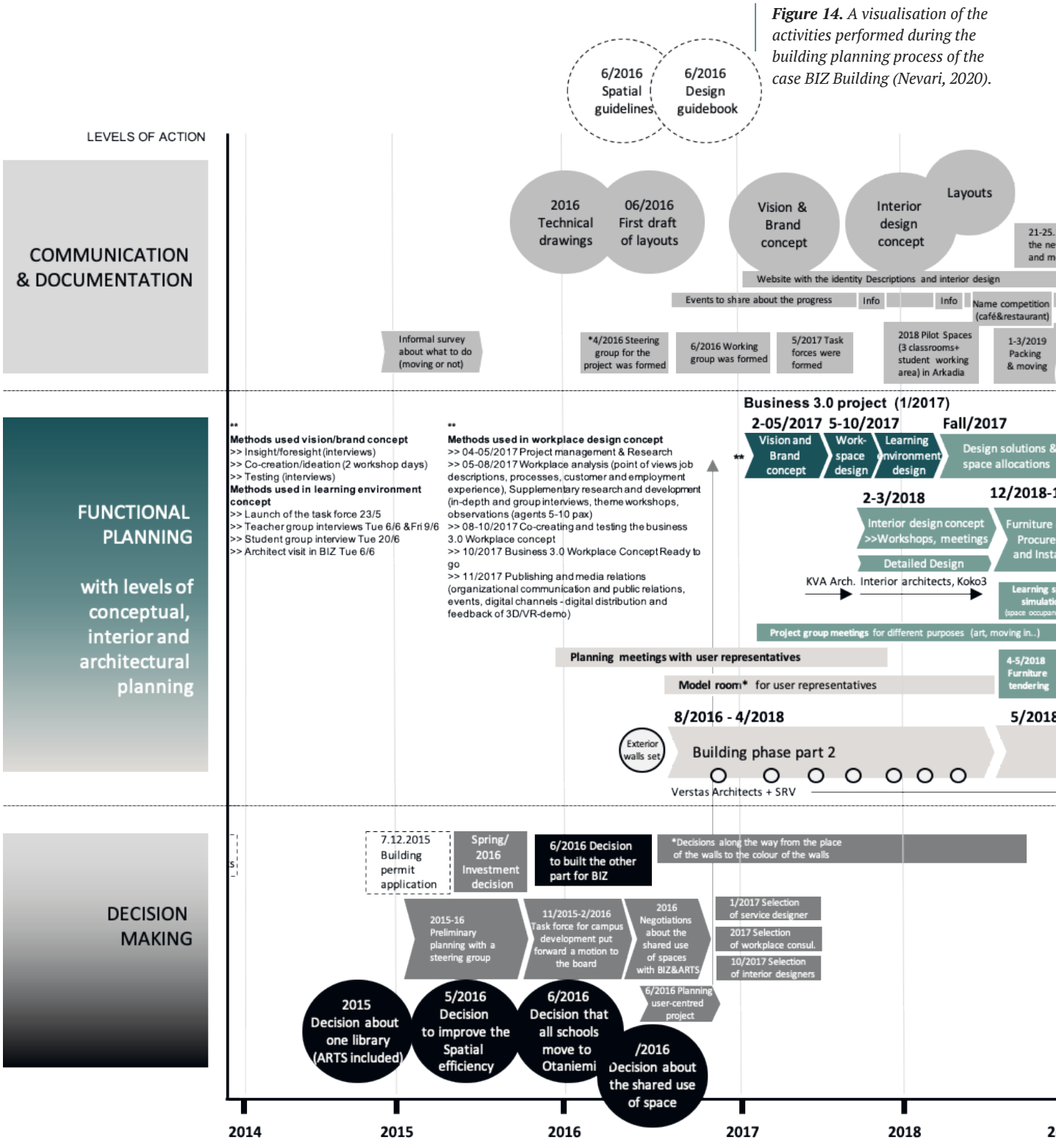


Figure 14. *A visualisation of the activities performed during the building planning process of the case BIZ Building (Nevari, 2020).*

Note for the reader: The complete visualisation can be discovered in Appendix 4.

where they received feedback on their ideas. Communication transpired throughout multiple visualizations of the spaces by the interior architects.

The middle part of the process map illustrates the level of functional planning with three areas of planning: (1) Conceptual planning (dark green colour); (2) Interior (light green colour) planning and; (3) Architectural (colour beige) planning. The conceptual planning had four separate design activities that were played out over a short amount of time. All of these were part of the project called "BIZ 3.0". The first design project was the service design project with that involved brand and identity work. The work aimed to create a direction for planning with ideas to make the identity visible in the spaces. This identity project was necessary due to the problematic starting point; people did not want to move away from the city centre, and the bustling atmosphere. The second design project was the workplace design to plan the office spaces. The third one was the learning environment planning to find solutions for the teaching rooms. The fourth one was the interior concept planning – how to take the identity and translate it into space. The budget is reserved for the spatial changes after moving in. This supports the idea that development does not end when the building is completed.

The decision-making processes had two separate functions: (1) the campus-level decisions stemming from the strategy work; and (2) the organization´s decision-making processes to take the planning forward.

8.3.2 Evaluation of the collaborative process

Based on the interviews, the BIZ case was seen as being both successful and challenging. The tight schedule and culture changes created a problematic starting point for the process. The real estate owner conducted a post-occupancy evaluation survey to evaluate the process as a whole and the functionality of the new study and work environment. In the case of BIZ, on average, 45,5% (n=76) of all the respondents felt that they had excellent opportunities to participate in the planning (43,1% faculty response, and 50,3 % staff response). On average, 68,6 % of the respondents felt that the communication worked excellently in the project (65,9% personnel response, and 73 % student response).

Considering the interview analysis, the measurements of the success of the project appeared to be positive. At the end of the process, people were excited to move in early and gave positive feedback of the spaces. However, the difficult starting point and the fast planning process did not support the participation of the users. The results of the post-occupancy study imply that the success of the collaboration might have suffered from the tight project schedule. From the Real Estate owner´s perspective, it seems that the flexible working environment outlined in the spatial guidelines of Aalto University was not achieved at the extent as it was achieved at Väre.

The strengths of the process include strong process management and clear, structured projects that incited involvement and excitement. The spaces present the identity of the community with a generally shared vision. Overall, the resources invested in the process created an excellent platform for success. The service design agency, interior architects and workplace consultants supported the planning by utilising expertise in every stage.

In Figure 15, various activities are colour coded based on the three modes of working introduced in chapter 4. The colour coding is three-fold and indicates whether the mode of working was more without direct participation (e.g. investigation or informing), more participative or more collaborative. This process had clear and concise collaborative projects following one another. Multiple people were involved in the collaboration throughout the process. The last part, however, included more of a participatory mode to take concepts into final solutions.

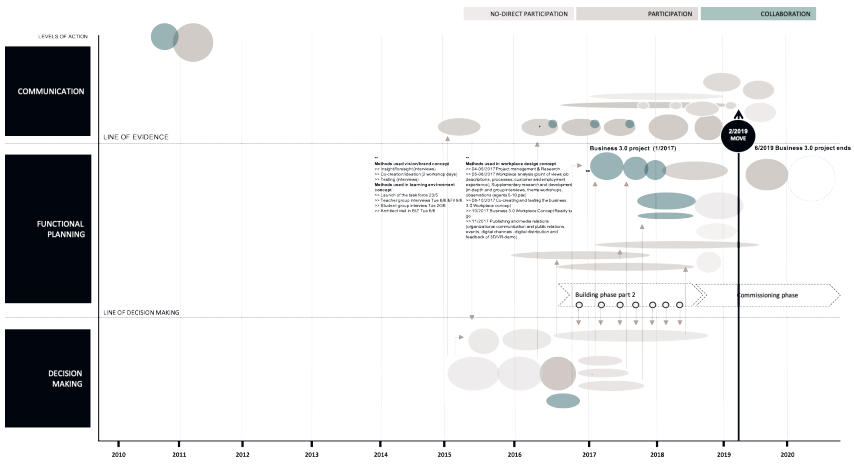


Figure 15. *Analysis of the modes of collaborative acts during the process (Nevari, 2020).*

This was mandatory because the decisions needed to be done along with the entire process because the project BIZ 3.0 started during the construction phase. In fact, the collaborative events might have been at first two open in a sense that decisions were already made in the planning phases.

The first phase was a service design project where multiple users, as well as stakeholders, were involved. Included in these groups were, future users, high schoolers, alumni and the corporate partners who were involved in either the interview research or in the co-creation workshops. The second phase of workplace development was more about negotiations over the private rooms and about the activity-based office concept in the context of the Business School. The third phase was the interior planning with collaborative events kept by the interior architects. The next element to expand on is the outside support, which came multiple focus groups that were involved in the organisation. This involvement served as the structure for the planning, which was done on a tight schedule.

In this case, the beginning was a vital part of the planning for a user-centred process. It was done collaboratively involving expertise from new ways of approaching building planning. The three projects, service design, workplace development and interior design were all publicly tendered. The parties selected were knowledgeable and were able to work together successfully, which created a fertile ground for success.

8.4 Case: LeC Building

Before moving to Otaniemi, three libraries were part of the different schools. One was next to the School of Business in Töölö, one was next to the School of Arts and Design in Arabia, and one was next to the School of Technology in Otaniemi, Espoo.

The official learning centre´s planning process starts with a service design project. However, the first push came from Andrew Harrisson´s campus vision and later from a master´s thesis by an interior architect student. In her thesis, she created a pilot space for students to hang out in the old library. Her work proved as evidence of the possibilities

that a building project could create. This produced excitement and an urge to create new future-proofed solutions. The libraries started the process by ideating solutions already before the actual building project started. The overall process of planning and moving in took between four and five years. It is worth mentioning that this building project was a renovation and thus, had different focuses compared to the other cases studied.

The design professionals in the LeC case were service designers, interior architects and architects. The user representatives were the library leaders with no backgrounds in design. The Real Estate representative had the role of workplace specialist and a “user representative" participating in the planning meetings. In the following section, the varied activities are expanded upon as they occurred based on the documentary research and interviews where the maps of actions were evaluated.

8.4.1 Activities creating a user-centred building planning process

Based on the analysis process, several activities were identified, which were further compressed into three primary levels of action: communication and documentation, functional planning and decision-making. Figure 16 illustrates the activities as they happened. The campus vision process, described in the first section of this chapter, can be placed as part of this process. Based on the interviews, the campus vision report was known but was not a guiding document in the building project.

The entire architecture and the building planning process can be roughly divided into project planning, actual planning and construction, and commissioning phases following the typical building planning process. These phases create the “skeleton" for the various complementary activities. In figure 16, the top part illustrates the importance of communication and documentation as evidence from the entire process. This level is visible for the people involved. This level included service design report, the project planning report and first drafts of the layout, which later were turned into a technical drawing. Additionally, certain events are characterised as having essential connections to the process of interior planning.

The middle part of the process map illustrates the level of functional planning with three areas of planning: (1) Conceptual planning (dark green colour); (2) Interior (light green colour) planning and; (3) Architectural (colour beige) planning. The conceptual planning four phases can be recognised. The first phase was the service design project, which served to gather customer (students and other stakeholders) insights and learn the complex needs from three different libraries. This phase was extensive with multiple interviews at the different schools and collaboration to create the new service concept. The architects were closely following the work in order to take ideas into the actual plans. The result was a new brand as well as a service description with new services to be created. The second phase was the interior design project. Once the project of a new service concept ended, the interior architects took the brand into the context of space. With the help of architects and interior designers, existing and new services were added to the layouts. The third phase was the workplace development, which was managed by the real estate owner. The starting point was the new activity-based office model, which was piloted around Aalto University. Few workshops were organised to develop ways of working along with spatial solutions. The fourth phase took place in the temporary spaces where the library personnel tested the new services and the shared ways to work before moving in.

The decision-making phase had two separate functions. On the one hand, the campus-level decisions were stemming from the strategy work and on the other, was the organisation´s decision-making process aiming to take the planning forward. Because of the influential role of the client, decision making went through them, making it considerably more straightforward.

8.4.2 Evaluation of the collaborative process

Based on the interviews, the LeC case was considered to be the most successful user-centred process out of all of the three cases. In this case, a post-occupancy study was not conducted as it was done in the cases of Väre and BIZ. However, according to the interviews, the staff and students were happy with the spaces and actively engaged in the new services created during the development process. Moreover, the building won the “Fennia Prize", which is conducted by Design Forum Finland, Fennia Group, Elo and the Finnish Patent and Registration Office. The award celebrates the strategic use of the design in business and business operations and can be seen as an indicator of the project's success.

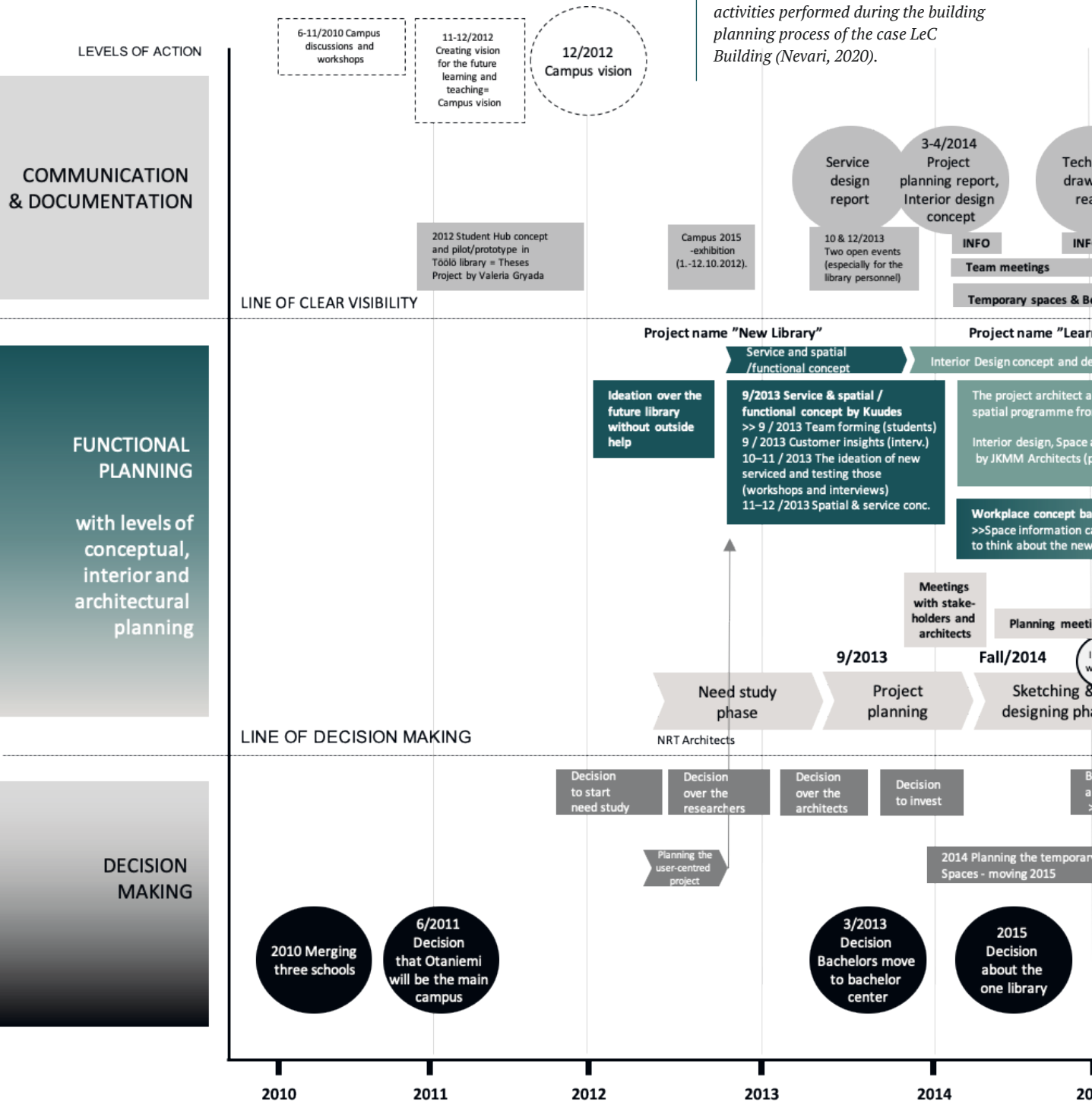


Figure 16. *A visualisation of the activities performed during the building planning process of the case LeC Building (Nevari, 2020).*

Note for the reader: The complete visualisation can be discovered in Appendix 5.

The limitations of the process seemed to be twofold. Firstly, the lack of knowledge in the new way of planning initially created resistance to the service design. This process was the first one to combine service design, interior design and architecture. Having open communication about the aims of the process could have helped the commitment from the beginning. Secondly, the influential role of the real estate owner on the planning meetings left less room for the users to have an impact on the decisions being made. On the other hand, the influential role of the owner made it possible to aim at the innovative spatial solutions in a tight schedule.

In Figure 17, various activities are colour coded based on the three modes of working introduced in chapter 4. The colour coding is three-fold and indicates whether the mode of working was more without direct participation (e.g. investigation or informing), more participative or more collaborative. This process of LeC case is similar to the BIZ case, having a clear and concise collaborative process, following each other with relative pace. The entire planning started with collaboration and extensive user research. The aim was to create a new service concept and then a brand identity for the spaces. The collaboration took place between the users, staff and the designers. The workplace development was mostly participatory in manner, whereas the services were developed collaboratively.

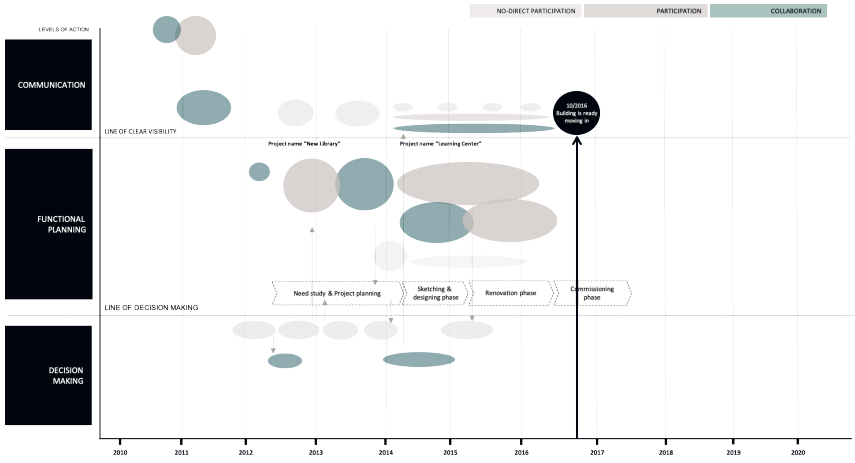


Figure 17. *Analysis of the modes of collaborative acts during the process (Nevari, 2020).*

8.5 Comparing collaborative design in the three cases

From the perspective of user-centred planning and according to the interviewees, all of these cases were successful. Furthermore, all of the cases used the entire range of collaborative design, investigation, participation and collaboration. Based on this rather small pool of data, it is hard to argue whether there was strategic thinking behind the selection of the modes of collaboration. However, this analysis of multiple case studies suggests that the difference between these three cases lies in how the collaborative modes were used and how the ideas were then taken forward.

The case Väre had more investigative modes of working, in the beginning, lacking the collaborative and holistic future view of the shared vision. Whereas, in the BIZ and LeC cases, they immediately took a holistic approach with service design projects and structured collaborative events. In the case of Lec, a service concept was created at the start of the planning. This concept included extensive user knowledge with an overall vision of the service offerings, new and existing. From there, interior designers who were on board with the knowledge creation took the ideas into the layouts. Similarly, in the BIZ case, an identity concept was created at the beginning of the planning. This concept included brand elements with a mood board and ideas to take to the building. The vision did not include the overall functions; a workplace design was done separately from that work. These two cases demonstrated the ability to choose a direction in which the project should go strategically.

Reflecting these ideas to Väre, the case could have benefited from a sharper vision in the initial stages of the planning. Based on the interviews, the vision was created in three different projects: (1) the investigation of the working styles; (2) the learning environment concept; and (3) the working environment concept. In reference to case Väre, the case LeC case managed to create a compelling shared vision of the overall functions and services of the building early on, supporting the entire process. Additionally, the BIZ case managed to overcome the challenges of a tight schedule and overcome the resistance by utilising a well-managed collaborative process.

Based on the collaborative maturity framework introduced in chapter 4, the author suggests that the LeC case was using a strategic approach to method selection throughout the process and that some of these indicators were present in the interviews (see Figure 18). Firstly, the project combined many different professionals from the onset to design the concrete solutions for the building collaboratively. Secondly, the service design team with participants from the organisation gathered extensive user information, which was used to ideate new service offerings. This process created commitment for the people involved. Thirdly, the workplace concept was taken as a given model, which was tested extensively in the organisation of Aalto University. Collaborative discussions about whether the workplace concept worked or not were organised because of the tight schedule. The discussions were mostly centred on how to make this concept more reflective of the users' visions. However, it was mentioned that this process could have been more participatory due to the change resistance of the personnel. Furthermore, the process relied heavily on the motives of user representatives who took the ideas further for testing later in the process.

Next, the author suggests that the case BIZ used strategically different approaches and methods similar to those in the case LeC. However, the timing of the collaborative development created challenges with workplace development and the service design project. The main difference between the BIZ and LeC cases was the focus on the identity from the start in the case BIZ. This decision to create an extensive service design project with identity and brand focus was probably a perfect solution for this organisation. However, it was mentioned in the interviews that the process had some communication challenges. During the service design project ideas were collected extensively, and multiple stakeholders were involved in the design concept. These ideas included multiple spatial elements for the building. Unfortunately, the planning was at the point where significant decisions about architectural choices were already decided—this created confusion among the participants. Therefore, the BIZ case is placed in between these two cases within the collaboration maturity framework. The collaborative process could have benefited from a more strategic choice of approaches or more fluctuation between no-design and collaborative and participatory design.

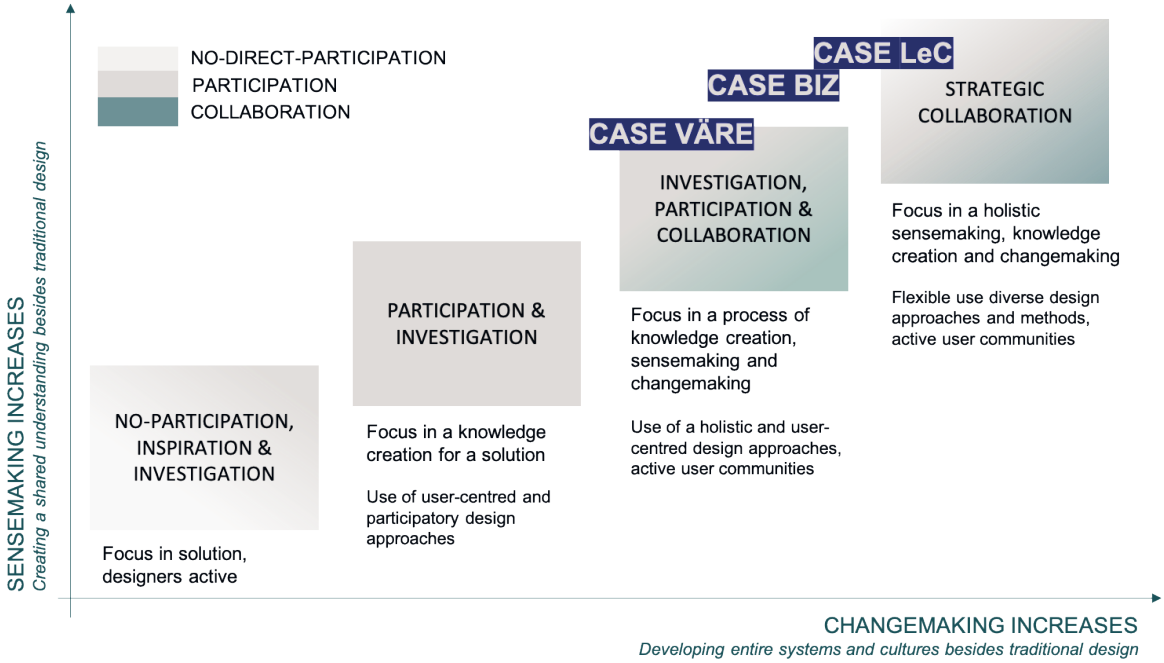


Figure 18. *The maturity of collaborative design in the cases studied based on author´s perceptions (Nevari, 2020).*

The Väre case is complicated to evaluate due to the lengthy user-centred process. As mentioned, the analyses suggest that Väre lacked a collaborative vision element at the beginning of the process. Moreover, the learning and working environment projects were separate from one another. Additionally, based on the interviews, the most crucial phase of taking ideas into concrete spatial solutions was not done on a collaborative nor participatory level. If understood correctly, spatial programming was done by professionals. Equally important is the fact that the first drafts of the building were done before the workplace concept, during the architect competition. Inevitably, years between the different development projects created a challenge to create a cohesive overview of the vision. By comparing two of the other cases to this one, it could be argued that this case could have benefited from more precise and compact projects instead of separate projects and multiple workshops.

In all of the cases, strengths and weaknesses can be identified. In the collaborative maturity framework, these cases all situate rather high on the scale and can bring educational value for practitioners embarking on a similar journey. However, this framework, with an analysis of three different cases requires further research.

9. RESEARCH FINDINGS

This chapter presents the findings from the analysed data. It is based on documentary research and semi-structured interviews. To see the methodology used, see chapters 6-7 for a detailed description. The aim has been to explore the complex phenomenon through three research questions: Q What levels of action are required to create a user-centred and collaborative building process? Q 2 How can collaborative design be better understood and described? Q 3 How could have the process been more profoundly human-centred? Next, the findings from this research are introduced following the research questions.

9.1 Findings of the levels of action creating a user-centred and collaborative building process

Based on the thematic analysis, three primary levels of action with different purposes in the user-centred process can be identified. These levels of action were threefold. The level of visible evidence is described as communication and documentation, whereas the level of actual planning is described as functional planning at three different scales. The background actions behind the scenes are described as decision making. The following sections introduce these levels in more detail.

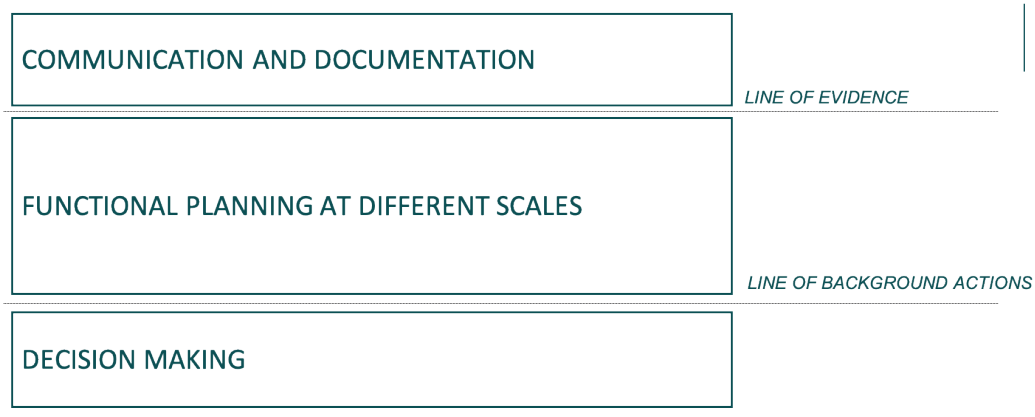


Figure 19. *Levels of action in user-centred building planning process based on the findings of this study (Nevari, 2020).*

The level of communication and documentation is necessary for collaborative processes because of multidisciplinary participants, an open process, and different phases connecting over a long period. Initially, the communication was seen as essential to create a shared language between the different people involved and to present the phases and designs in a comprehensible form for the users. Secondly, the argumentation over the solutions with communication was seen as vital to avoid misconceptions. Finally, the documentation was a necessary tool to transmit information and enable proceeding with ideas created collaboratively. Thus, the level of communication and documentation is the glue that holds the other elements together and diminishes the possibility of misconceptions or the loss of created knowledge.

"We have taken those [comments from the users] into account, but I would say that we had difficulties in communication . . . . that [lack of communication] is transmitted to the users. Isn't it said that communication can never be done too much."

– Väre, inside 1.

The level of functional planning creates a platform for collaboration with different emphases on the scale of design artefacts, as illustrated in Figure 20. Firstly, the phases of the building process create the demands for the collaboration phase. Secondly, the scale of designing is connected to the lifespan of different design artefacts, technology, furniture, interior surfaces and finally the building. Thus, the level of functional planning is following the same process as the building planning process with an emphasis on conceptual planning before the actual walls are drawn.

"The users cannot understand why this thing cannot be anymore changed when the walls are not even drawn yet."

– LeC, outside 1.

The level of decision-making creates background actions, which, in turn, guide the process. Even though the users might not have seen the solutions created as an outcome of decision making, this was the case in many parts of the cases studied. Based on the interviews with the designers and architects, it was understood that the decisions and policies from the new ways of working were provided as a framework aiming to guide the bigger picture vision. Thus, decision-making plays a crucial role in taking the process forward. With that being said, the decision-making could have been more transparent to avoid being seen as manipulative.

"It is seen here in the building in the fact that the students do not have their individual spaces [referring to the decision made in 2016 to maximize the shared use of spaces across schools]. It is directly connected to the strategy. Occasionally, it has been interpreted in a misleading way and seen as a result of this building, but it is actually due to the policies of Aalto"

– Väre, inside 1.

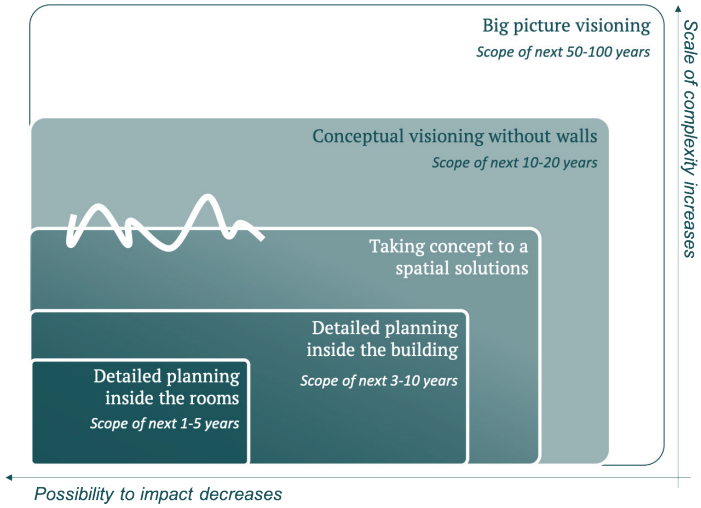
To sum up, the three levels of action during the building process include: (1) The communication and documentation; (2) The functional planning with emphases on conceptual planning and; (3) The decision making to guide the vision for change.

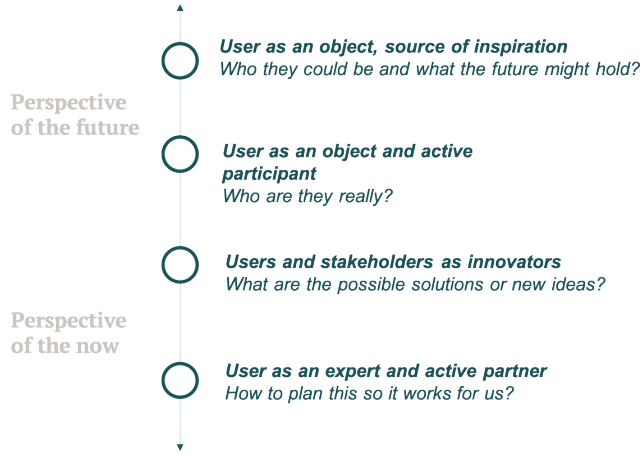
9.2 Findings of the collaborative design and how it could be better understood and described

Based on the analysed interview data, three themes were reoccurring when making sense of the collaboration. Firstly, multiple, sometimes contradicting goals behind the collaboration were identified. Secondly, the different scales of planning create a framework for collaboration. Thirdly, the need for different perspectives and user roles varies during the extended co-design process. The next section delves into these findings in more detail.

Figure 20. *Scales of building planning creating a framework for collaboration (Nevari, 2020).*

Figure 21. *Different roles of the users and perspectives in a building planning process (Nevari, 2020).*





The multiple goals behind the collaboration can be categorised into five main themes based on the interview analysis. First, user involvement commonly aims at functional outcomes. It aims to understand the people, the organisational functions and the activities done in the existing spaces in order to design solutions that function well. The goal is to avoid costly changes after moving in, particularly when it comes to specially equipped spaces such as wood workshops or such. Secondly, user involvement aims to create satisfied end-users. Its intentions are to fulfil the hopes of the people for the spaces, resulting in people who enjoy the spaces. This can be overly optimistic and simplistic to be considered a single outcome. Thus, it was not seen as the only goal for user involvement, but more as one hopeful outcome of the process. Thirdly, the user involvement aims at the renewal of the organisation. Workplace development was connected to almost all of the cases. In activities regarding workplace development, the aim to renew the organisational activities was a reason to take users as part of the planning.

"The idea of involving people in the process is to create spaces that serve the use and on the other hand make people to accept the idea of coming here."

– BIZ, inside 1.

"The final success comes when entering the space and seeing students using that space – an enormous positive buzz."

– LeC, outside 2.

Additionally, the involvement aims to commit users to the planning and solutions created. It aims to build ownership over the spaces throughout the iterative process. Lastly, user involvement aspires to find attractive and desirable solutions. The pleasant aesthetic of the place was brought up while discussing the reasons and definitions of user-centred design. It was seen as an outcome of the conceptual planning and satisfied end-users. To sum up, the goals for user involvement in the form of participation or collaboration are multiple. The final result should be at the same time functional, future-proofed, attractive, cost-effective and satisfying for the end-users.

"It creates ownership when they are involved in the development and ideation, they feel that they have been creating it together so that they have this ownership of the project."

– LeC, inside 2.

The different scales of planning create a framework for collaboration. Based on the collected and analysed data, the main scales of planning were identified with a connection to the level of impact, as illustrated in Figure 20. The first one is the big picture, visioning. It takes the future perspective with a focus on 50 to 100 years. It calls for conceptual planning with future focus and ideation on the systemic level rather than the spatial level. The second scale of planning is the conceptual visioning without walls to find the right path for functional planning. Based on the interviews, the users should have a clear vision and direction to be able to guide architectural planning in the right direction. It is typically a matter of combining two worlds: the architectural and

"The building will be there for the next 100 years, the lifespan of our technological solutions is three years, those electrical work desks and chairs maybe 20 years."

– Väre, inside 2.

user's vision. If the user's vision is not strong enough, either the owner of the building or the architects must move the vision forward. The greatest challenge of this phase is the users' motivation in planning years before the actual moving. The people involved in the process might change a workplace or school before the building is completed, and thus, they might not feel as interested in participating in the development. The third scale of planning is where conceptual planning meets spatial solutions. In other words, when the abstract ideas are taken to concrete spatial solutions either to the layouts (renovation project) or to spatial programme (new building). The challenge of this phase is to understand the essence of the concepts and turn them into spatial solutions envisioned by the people who might not be around to create the concepts. The fourth scale of planning is detailed planning with two sub-phases. The first one focuses on the inside of the building with spatial areas. From there, the focus shifts towards the individual rooms within the spatial areas. The detailed planning inside the building begins after the structure of the building is set. The detailed planning inside the rooms starts once the building permit is received. At this point, the users become an essential source of information. The architects have detailed questions, such as how much space is needed for papers.

"Before any lines were drawn, any walls I mean or anything, the activities and functions were modelled."

– Väre, inside 2.

"We still too often copy yesterday´s models knowing that building, changes and spatial changes are expensive, and they burden the environment. With this work, we can prepare for the future and coach the organization in advance to work differently."

– BIZ & LeC, inside 2.

As mentioned, the scales of the planning have three to five phases depending on various matters. The need to renew the organisational activities alongside spatial planning creates a demand for more profound conceptual planning. Additionally, spatial planning at the end of the process depends on the spatial types. In case multiple specially equipped spaces are places in the building, the planning takes longer. Additionally, if the spatial solutions are entirely new for users such as activity space offices, it might need more involvement.

"The present dilemma is; we do not ask what you want and try to create it, but the collection of customer insights means that we try to find even the hidden needs. . . . Through that information, we can get a hold of the insights and user profiles. User-centredness is also about hidden needs and turning them into words."

– BIZ & LeC, inside 2.

The identified perspectives for the roles of the users are four-fold, as illustrated in Figure 21. Firstly, the perspective is on the future where the user is either an object or a source of inspiration. The interviewees discussed the fact that users are not able to tell everything that should be taken into account from the future perspective. Alongside the research about the existing situation, research about the silent needs of the users and silent signals of the future direction are required.

Secondly, the perspective can be both in the present and futuristic, and

the users can be either objects or active participants. The designers mentioned the need for information from the users, but sometimes it is not available. The designer´s job is to challenge the users and take an objective perspective on the case. Simultaneously, the users need to commit to the solutions; thus, they are active participants in this process. One of the interviewees mentioned a productive way to be objective and active at the same time; that the users themselves could join the research team to understand the existing situation and then collectively create future solutions.

Thirdly, the role of the user can be as innovators based on future and improved solutions. In order to gain ideas for the future, the process needs to be opened up for people with different backgrounds. Inviting people together can bring about many great ideas which those inside the project had not thought of. This part of the research is not only user-driven in the sense that users are not merely giving opinions or ideas, but they are being observed, and their ideas are taken further by a multidisciplinary team. Without the expert or outside analysis of the list of ideas, it can be hard to see which way to go.

Fourthly, the role of the user can be about bringing expertise and active partnership into the planning. It is then that the perspective shifts from the future to the present. The active partnership seems to have two elements: the first one being the user representative who filtered the information from the user discussion and the other one being the focus group meetings that discuss the solutions rather than collecting any further opinions. Based on the cases, the further the process went, the more detailed information was required from the users who were seen in these cases as experts.

To reiterate, the perspectives and roles of users change during the planning process. During the same process, users can be active partners, influential experts and source of inspiration. Thus, user-centred planning means much more than active participation.

“The user representative is in the planning meetings all the time. . . . I tried to bring the voice of the user [into the planning meetings] . . . Whenever we were thinking ‘should we go this or that way,’ the user’s voice was heard.”

– Väre, inside 2.

“An other value is the variety of ideas. The idea of crowd-sourcing which includes the idea that the best ideas might not come from me, but they can come from others. ”

– BIZ & LeC, outside 2.

9.3 Findings of a more profoundly human-centred building planning process

Based on the analysed cases, five thematic insights were identified when creating an even more profoundly human-centred process. The focus on early future visioning creates the opportunity to plan from a human perspective. The broad knowledge about the users, customers and stakeholders of the building serves as a guide in creating a shared understanding of the "user". The connection of customer perspective with background actions (workplace design) could help to understand the user as a whole. Furthermore, the planning of the user-driven and collaborative process with help from outside could detour the challenges evidenced in these cases. Finally, the change process can create emotions that require space and time outside the workshops.

The first insight is to focus early on the future vision. The most significant opportunity to influence the direction of the entire project is at the beginning of the process. As one of the interviewees mentioned "95 % of all the decisions are practically locked", in the beginning. Additionally, the beginning can lead to "no project at all" as one of the interviewees mentioned. If the organization is aiming to renew their actions along the building process, the new ideas for the activities and organizational structure should be envisioned early on. Otherwise, the decisions might create unnecessary constraints for the brainstorming and limit imagination. Once the layouts are drawn, the changes become challenging to make, and it can even create a feeling of confines that do not necessarily exist.

"The phase of need studies within the construction process is the phase where it can end up in the conclusion that we do not even need this building process."

– Väre, inside 2.

"At the proposal phase, 95 % of all decisions are practically locked. So even though it is not yet designed, the costs are framed and locked. So, it would be best if the conceptual decisions could be made already then."

– Väre & BIZ, outside 1.

With a focus on early development, comes the challenge of getting people onboard many years before the building is ready. Initially, people might resist radical ideas, and therefore, they need additional time to learn more about the future and understand the change needed. Thus, it might be beneficial to approach the project in a new way and outside of the usual confines by bringing people together from different disciplines. One of the interviewees mentioned, "In the service design process, the future is present somehow more naturally".

The second insight involves the gathering and analysing of the user data into a "guiding star" of the entire process. The idea of "human-centredness" evokes the question of who is considered as users. The user can be part of the primary user group of the building, such as a teacher, employer, service provider, manager or someone else. Additionally, the user can be a visitor to the building, such as a customer of the services or someone who might be the future user of the building. User knowledge gathered at the beginning of the process should be re-visited at times. In this way, the idea of a human is more natural to keep in the centre of planning.

". . . . but we have always the user or whom we plan for at the centre of planning."

– Väre & BIZ, outside 1.

" . . . . We have these two schools of thought [service design and workplace development] doing the same but from different perspectives: the service designer looks at the customer interface the front end [customers] and then the workplace consultant looks at the backstage [employers]. "

– BIZ & LeC, inside 2.

The third insight is to connect the data gathering of a front-end user, a customer, and a back-end user, an employer or service provider. Two of the three cases studied had both service design and workplace design projects connected to the process. These were separate projects looking at the users from two different perspectives: the people using the spaces as employees, the backstage actions and the people using

the spaces as customers, front end actions. The projects did not reflect the same information from but created knowledge of their own. Managing these two perspectives together could help to create entirely new solutions with a comprehensive human perspective.

The fourth insight is to plan the user-centred process with outside help. The interviewees with project management responsibilities mentioned multiple times that they received outside help in the selection of the right approach for the user collaboration or the organizational development next to planning. Thus, it seems crucial to plan the process carefully in order to understand the new mindset of future-driven thinking. In other words, the planning of a process can benefit from outside help to see all the possible opportunities.

The final insight is bringing empathy to the change process in two ways, by creating a forum for the emotional dialogue during the change process and by being present to the people. The latter means that the user representative with decision-makers could be even more present for the people. In a couple of the interviews, the idea of being more present and having a forum for emotional dialogue was discussed. It was seen as an improvement for the user-centred process. In some of the cases, the workshops became the place to express the emotions towards the change or management. Listening and giving attention creates a feeling of importance and being heard.

"I would say maybe presence [is the most important part of the workshops]. Teaching is not about using a certain method to gain information but about being present. Similarly in workshops, being present in these situations creates the feeling for people that they have been heard".

– Väre, inside 1.

10. DISCUSSIONS OF THE FINDINGS

This chapter reflects the findings to the literature with a discussion over the key insights.

10.1 Insights over the research questions

In this section, the findings are reflected in the literature review answering to the three research questions. The discussion part has been divided into three sections based on those questions (1) The levels of action creating a user-centred and collaborative design process; (2) How to better understand the collaborative design; and (3) How to create more profoundly human-centred processes next to building planning.

10.1.1 Insights into levels of action

When comparing the theories in the literature and the findings from this research, two main insights can be found when considering the actions of the user-centred and collaborative design process. **The first insight** is the potential of a building planning process with the additional potential of expanding design approaches. These new ways to approach the planning of spatial solutions, such as designing for services, can support the new ways of planning. Building projects can work as a catalyst for the change wanted in an organisation. Additionally, it can work as a facilitator for a broader strategic change in values and sustainable solutions. In order to achieve this, a new mindset for planning is required.

"How to link the real estate renovation programme with the client's renewal of actions? – This type of long construction process works as a kickoff or indicator to start some sort of intuitive development process."

– BIZ & LeC, inside 2.

Scholars discuss the rapid expansion of design to solve some of the more intangible, complex problems and systems (Brown, 2009; Thackara, 2005). Cottam and Leadbeater (2004, p. 22), describe co-creation of services as a "creative and interactive process which challenges the views of all parties and seeks to combine professional and local expertise in new ways". Service design is expanding towards organisations in more strategic levels (Meroni & Sangiorgi, 2011). Furthermore, the transformation design and other new ways of viewing the change

potential in the design are expanding (Burns et al., 2006). To conclude, the design holds opportunities for new ways of planning which can push the desired shift in organisations.

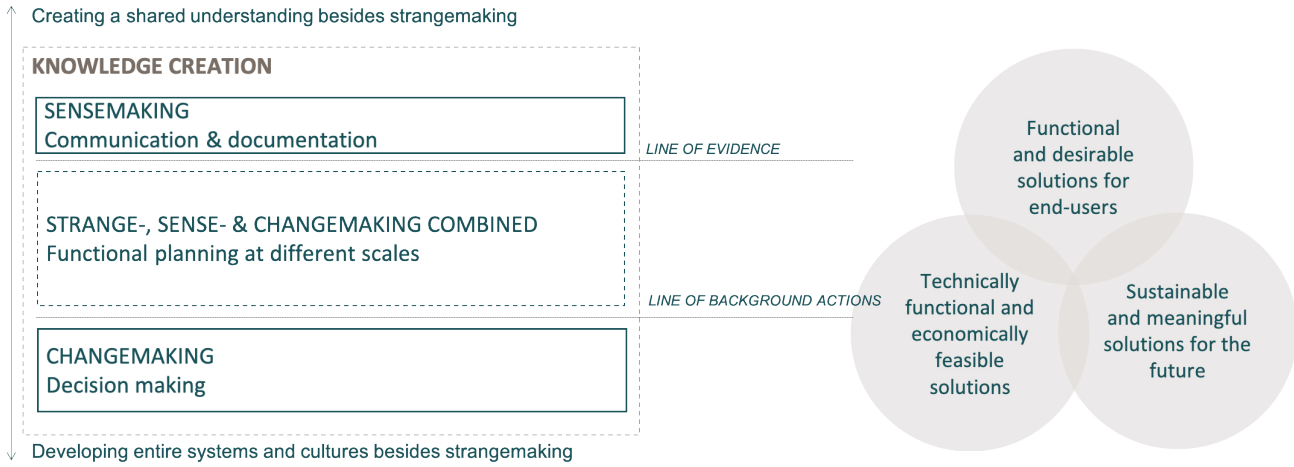
The second insight into the collaborative actions is that the three primary levels of action have the qualities of different means of knowledge creation, that was introduced in the literature review. As a reminder, these included sensemaking, changemaking and strange making. Firstly, the level of communication and documentation seems to aim more towards sensemaking by illustrating the process, knowledge created, and the desired change. As addressed in the literature, the outcome of the participatory and collaborative design can be a common, shared understanding of the complex issues, visions and ideas next to the traditional design solutions (Mattelmäki and Visser 2011). Additionally, the level of communication can be connected to the communicative theories, where the goal is to find different platforms for different voices to be used in democratic discussions (Mouffe, 2000). The level of communication has objectives of creating a shared understanding both from the dialogue happening around the planning and the actual knowledge creation during the planning process.

Secondly, the functional planning level is the stage for collaboration. In other words, it combines the sensemaking, change and strange making. It is widely discussed in the literature that extended collaborative processes often include different modes of working and parallel processes of participation and collaboration (Mattelmäki & Visser, 2011; see, e.g. Staffans et al., 2019). These design activities can include user research, collaboration workshops or more communicative activities such as dialogue or activism. To conclude, the study suggests that this functional planning level should include multiple activities with various design aims, and not only the apparent goal of designing spatial solutions for a building.

Thirdly, the level of decision-making is creating a direction for the change; thus, it applies to a design activity of changemaking. It can be seen as a tool to guide change and support organisational development. The expanding use of design has been moving towards transformation design which is seen as facilitation of change in the organisations and communities (Burns et al., 2006; Sangiorgi & Junginger, 2009;

“In service design process the future is present somehow easier and more natural way than in the construction led process which starts from, how many square meters are placed -- Instead, it should start from the actions.”

– Väre, inside 2.



Sangiorgi, 2011). The literature suggests that the reason for a rise in new community-led actions in building planning stems from the desire to take the shared vision, ideas and direction forward (See, e.g. von Hippel, 2001, 2005, 2016; Hyysalo et al., 2019). The study suggests that this role of user representatives inside the organisation is connected to the knowledge creation of changemaking, which is essential in guiding the desired change.

Figure 22. *Different levels of action combined with design objectives and knowledge creation aims. (Nevari, 2020).*

Figure 23. *Three primary goals for user involvement during building planning (Nevari, 2020).*

To sum up, this study suggests that a successful user-centred building planning process should include knowledge creation with the aims of sensemaking and changemaking on the same lines with traditional design aims. Therefore, the levels of action recognised in this study could be seen from this perspective, as illustrated in Figure 22.

10.1.2 Insights into collaborative design

When comparing the theories in the literature to the findings from this research, four main insights can be found when considering how to make sense of the collaborative design. **The first insight** is that clients and users can have contradicting objectives. Based on data collected and analysed, many reasons were identified for user involvement. The aims of user involvement can be functional outcomes, satisfied end-users, the renewal of the organisation, committing users to the planning and solutions created as well as attractive and desirable solutions. It seems that the real estate owners are aiming to find a long-term functional solution, whereas the users are aiming for immediate functional and desirable solutions.

According to scholars, the objectives of user information are technically functional, economically profitable, and valuable and pleasurable for the users (Hyysalo, 2009). The sometimes-contradicting objectives are brought openly to the discussion from the beginning. Based on these insights, the multiple goals of the planning process should be brought up openly for discussion with the people involved. In other words, transparency in decisions made based on the multiple goals is suggested by this study. This aim is described further with figure 24.

The other insight to be considered is the power and degree of participation. The role of the client or the Real Estate Owner can become a facilitator or "advocate" for the vision of the client. This political perspective was raised already in 1965 (Davidoff, 1965). In other words, participation can become manipulation without transparency in decision making. The ladder of participation introduced in 1969 is a valuable reminder of the varying degrees of participation (Arnstein, 1969). Based on the case study, the users of the building might not be as satisfied with efficient spatial solutions as the building owner. In this scenario, architects land in the middle, becoming "advocates" for the change. This study suggests that in order to create a successful user-centred planning process, a high degree of participation and collaboration with a shared power between the owner and the end-users are required, as illustrated in Figure 24. In this case, a high degree of participation and collaboration means to aim for a strategic approach and method selection, referring to the design framework presented in the literature review. In this framework the quality versus quantity is always the ultimate goal of collaborative events.

The third insight is about identifying the multiple roles of the users and aiming to strategic selection of methods during the functional planning process. The collaborative design is an approach to design where users and stakeholders are involved in the design process, accompanying design professionals. Thus, it can be argued that users are experts in their everyday work. However, they might not see the future solutions, and their ideas might get tangled with cultural mediators, such as language, terminology, tools, and mindsets (Hyysalo, 2009). The narrow perspectives that we have as humans call for a fresh mindset and approach to view the world from different lenses during the vision making process. With that in mind, this study suggests that users have different roles at different stages during the functional planning, as introduced in Figure 23.

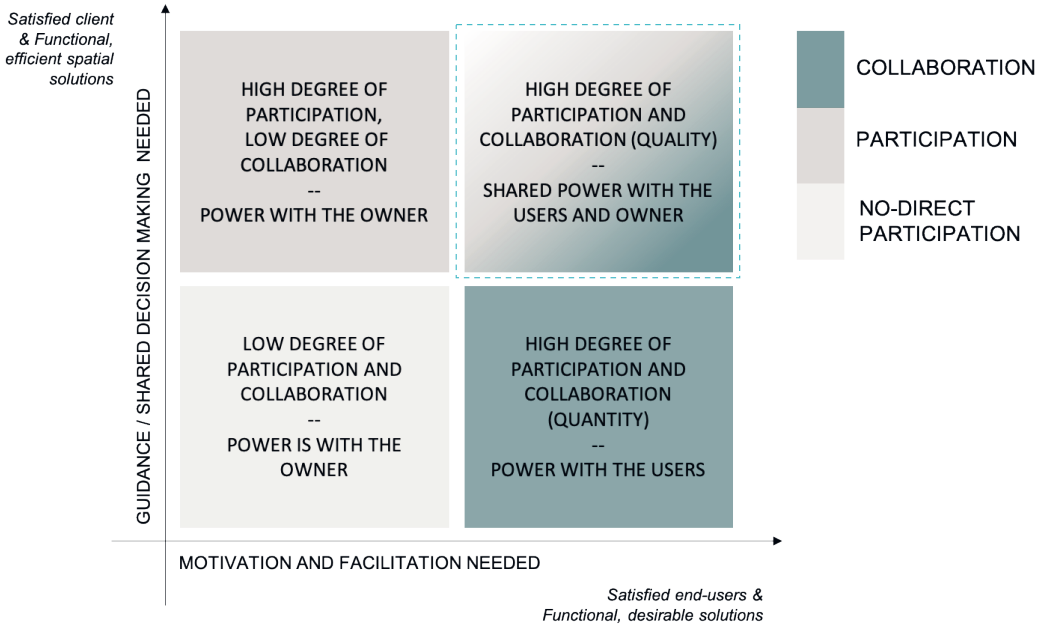


Figure 24. The matrix of sometimes contradicting aims of client and users with a collaborative design modes and degree of participation (Nevari, 2020).

10.1.3 Insights into the profoundly human-centred process

When comparing the theories in the literature and the findings from this research, five insights on how to create even more profoundly human-centred process can be identified. **The first insight** is the shift between human and user-centricity during the extended collaborative design process. In the literature, user-centred and human-centred design are discussed to have different emphases. However, in practice, they seem to be used synonymously. Whereas human-centred approach shifts the attention to real human and ecological needs, with an emphasis on users in general (ISO, 2019, 3.7; Pirinen, 2016), the user-centred design draws information from actual users and uses that information for designing (Usability Professionals' Association 2020).

Based on the findings of this study, five scales of planning were identified: (1) Big picture visioning; (2) Conceptual visioning without walls; (3) Taking concepts to spatial solutions; and (4,5) Detailed planning inside the building and rooms. These scales, also known as planning phases, have emphases on different life-cycles from 50-100 years to 1-3 years. In order to create an even more profoundly human-centred process of planning, the first scales of planning could benefit from more human focus rather than user focus. While the possibility to impact these solutions decreases, the users become experts of their work. The more detailed the planning goes, the more user-focused the design can become.

The discussion in the literature concerning the benefits of user-centred and human-centred design focuses on the user and the continual process of ideas, which draws ideas from the actual users (ISO, 1999; Rizzo, 2010; Usability Professionals' Association 2020). In order to further highlight these benefits and create a more profoundly human-centred design process, the emphasis could be on the creation of the user knowledge and the continual ideation of the process. To conclude, this study suggests that a profoundly human-centred process embraces both human and user focus and that both are taken into consideration during the extended collaborative planning.

The second insight to be considered is the use of new design approaches in order to bring the human to the centre of planning throughout the process. Individuals, such as users of the building, can disappear in the complex systems. Buchanan (2004, p. 100) points out that in these complex systems "'integrating human beings into broader ecological and cultural environments" becomes important. The emphatic design tries to answer this challenge. The concept of empathy is discussed in the context of service design in the literature (e.g. Sustar & Mattelmäki, 2017; Johanson et al. 2002; Sanders & Stappers, 2012). It is seen as a way to connect with the users' experiences and emotions. An applied research method, such as service design, is a way to adopt the end-users' and other stakeholders' perspectives on the planning and to find meaningful design opportunities for them within the given context. Service design was used in two of the case studies, where similar benefits were identified. The case LeC is an excellent example of the emphasis on user knowledge where the spaces were designed with specific user persona in mind. Hence, it could be argued that service design or similar clusters of methods can help to create deeply human-centred solutions.

The third insight serves to emphasise the front-end development with vision making. The findings combined with the literature suggest that in order to innovate without constraints that may come further along in the process, conceptual vision making should start as early as possible. The importance of conceptual development at the beginning of the process was mentioned multiple times in the interviews. The front-end of the design is widely discussed in the literature (see, e.g. Keinonen & Takala, 2006; Noyes et al., 1996). The designer´s ability to imagine

alternative futures and make visions into tangible artefacts is discussed with similar emphasis (Meroni & Sangiorgi, 2011). Collaborative design literature discusses both the way to see the system and create a shared vision (Thackara, 2005) and the act of collective creativity accomplished with the people involved to co-create a direction (Mattelmäki & Visser, 2011). These two needs were identified in the findings as well. Based on the interview analysis, these phases are referred to as a big picture visioning and conceptual visioning without the walls, as illustrated in Figure 25.

The fourth insight is to gather user knowledge early on the process and use the knowledge as a tool to guide the planning throughout the process. In the context of product development, market research is a typical way to understand the needs, hopes, lifestyles and insights of the future (Hyysalo et al., 2016). This information is not collected only to create a usable product but to develop the business as a whole. In order to maximise the potential of the building planning process for the organisational transformation, it is suggested that the user knowledge should be used more comprehensively for the development. The findings of this study indicate that the use of design for organisational development is still not integrated well in the construction processes. To conclude, the study suggests that if the methods and approaches are planned carefully, the building planning process could bring knowledge to the development of the organisations along with architectural planning.

The fifth insight to be considered is the inclusion of sensemaking and changemaking objectives as parts of the functional planning. Creating a forum for the emotional dialogue during the change process means that management needs to be available and present to the people. This was mentioned in a few of the interviews as a way to improve the user-centred process. In a couple of the interviews, the idea of being more present and having a forum for emotional dialogue was discussed. In some of the cases, the workshops became the place to express the emotions towards the change or management. Thus, to create a human-centred process, human-to-human cooperation is expected. Listening and giving attention creates a feeling of validation and importance.

11. CONCLUSIONS

The following chapter takes a final look at the research questions and concludes the essential findings and results of this study. Additionally, the contributions and suggestions are provided for future research with the limitations of this research.

11.1 Results of this research

In this section, the results of this thesis are clarified based on the research questions. The results of this research are identified through qualitative research with connection to the theories presented in the literature review. Due to the main objective of the research, making sense of the complex phenomenon of a user-centred and collaborative process, the results are more strategic rather than detailed suggestions.

Overall, two main findings were identified from this study. Firstly, based on the collaborative framework presented in chapter 4, the study suggests that the maturity of collaborative design could be examined through four stages. In this framework, the first step combines no-participation and investigation, the second step combines participation and investigation, the third step is a mix of all of these collaborative modes of working, and the final step is a strategic mix of approaches and methods where users participate in the planning when needed. Additionally, collaborative design can be viewed through three modes of working. The first mode is no-participation with an emphasis on the investigation while the second includes participation with an emphasis on democratic and communicative acts. Finally, the third mode is collaboration, and it relies on collective creativity and shared expertise.

Secondly, this study suggests that user-centred planning processes incorporate three primary levels of action with clear phases for collaboration and diverse objectives for the use of design. The level of communication and documentation aims to make sense of the collaborative process, whereas the level of decision-making aims to direct the change wanted. Functional planning is the stage for collaboration with sensemaking, changemaking and strange making objectives. The

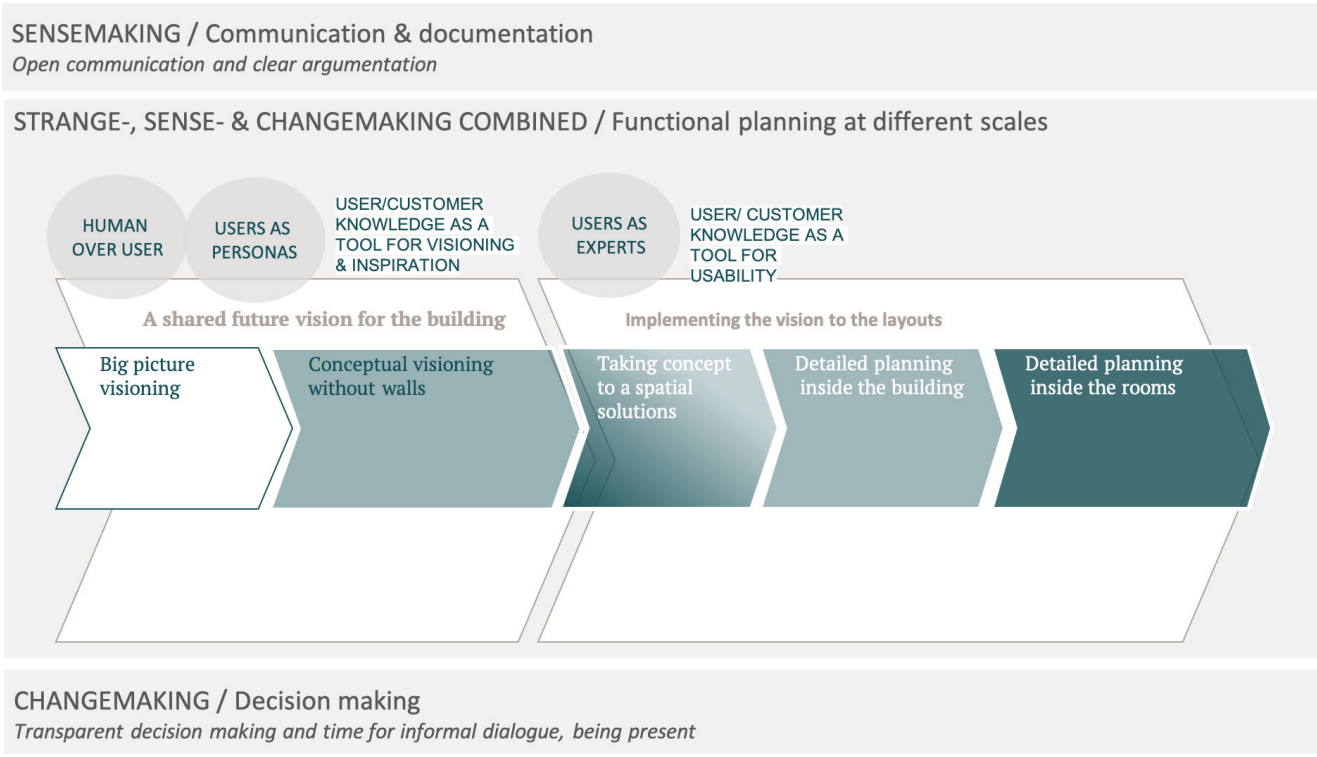


Figure 25. *A profoundly human-centred process visualised into a form of a process. (Nevari, 2020).*

phases for collaboration start with a big picture visioning, conceptual visioning without walls, and taking concepts to spatial solutions. It continues with detailed planning inside the building and finally, on to detailed planning inside the rooms. All of these levels of action create knowledge for building planning.

The final results of this study are a comprehensive outlook on a profoundly human-centred building planning process, which is illustrated in Figure 25. The study reveals that a successful user-centred planning process needs a strategic use of collaborative modes of working. The primary levels of action in a profoundly human-centred process are threefold: (1) The level of communication and documentation with sensemaking characteristics; (2) The level of functional planning aims to combine strange, sense- and changemaking characteristics; and (3) The level of decision-making holds the changemaking power with support to the communication and functional planning levels. Knowledge is created through all of these levels with investigative, participative and collaborative undertakings.

The insights and findings from this study indicate that development

should focus on the “front-end” of the building planning process using shared vision making activities. It is suggested that this phase takes place before any walls are planned; in other words, any constrains are placed. Furthermore, sensemaking and changemaking are suggested to be parts of the objectives for knowledge creation. The lengthy process of building planning with transformative aims calls for dialogue, including emotions. Time and resources are needed in the human-centred process as humans each react to change differently. The platform for collaboration should be free from aggression, fear and resistance, but all feelings should be acknowledged.

The study implies that a shift between the terms of user and human during the planning process can support future vision making and functional planning when needed. The findings indicate that the focus should be on the future vision early in the process where it can support the entire process and conclude by creating a story or a reason for further collaboration. In the early stages, the human perspective can support a more sustainable and cost-effective view than that of a singular perspective.

The new approaches of design and more strategic co-design thought process support the future and human perspective to planning. The findings indicate that user data should be gathered from the broad “user” perspective and the knowledge created could be used more as a guiding start in the process, keeping the idea of the human-centricity in the forefront of planning. Outside participation in the user-centred and collaborative design process is essential in order to understand the varied approaches for knowledge creation and collaboration.

11.2 Insights resulting in the application of visualisations to the research process

An applied service design technique, service blueprint, was applied to the research process from the start. This type of visual way of conducting research can be considered as a vital contribution of this thesis to academia. Whereas service designers with a design background are familiar with visual communication tools in their everyday practice,

in research, it is still uncommon to use an extensive amount of visual material throughout the research.

In this thesis, the use of visual diagrams supported the knowledge building in the context where multiple fields of expertise were tangled together. This thesis reveals the power of visualisations not only in showcasing the outcomes but as a learning and comprehending tool throughout the research process.

The key learnings from this application of visualisations were two-fold. First of all, the visual material revealed the complexity of the entire architecture and building process for the interviewees but simultaneously, it highlighted meaningful aspects of it by organising the information into clusters or in this case into levels of action. In other words, this thesis reveals that visual material can be used as a shared sensemaking tool. Second of all, the visualisation was used as an evaluation tool during the analysing phase. A colour coding system was developed based on the recognised modes of collaborative and participatory activities as part of the literature review. This way of analysing the cases turned out to be successful because of the universal meaning people make from colour coding and visual images. One can understand the essence of the research quicker, which makes this research more user-friendly.

Further research would be needed to verify the added value which visualisation brings to more traditional research fields. However, with this research, it can be stated that the visual use of diagrams throughout the research process adds especially value in the readability and usability.

11.3 Contributions and suggestions for the practice

The contributions of this work to the practice include explorations and sensemaking of this complex phenomenon. The grown image of the collaborative design during a building planning process implicates that in order for a designer to understand the complexity of similar processes, they would need a much more comprehensive education or additional education later on. The different disciplines connected to building

planning include leadership and organisational theories, strategic co-design and collaborative design approaches, urban planning, architecture and construction processes and additionally, design research. In some instances, information and graphic design can be considered as having a connection with building planning.

In addition to more comprehensive education, multidisciplinary design teams are needed to succeed in these types of complex processes such as the three cases identified. Thus, the designer´s ability to collaborate with people from diverse backgrounds is crucial. Additionally, the ability to solve or even fully understand conflicts arising from the organisation during planning would require more education or at least support from the different disciplines.

This work identifies four modes of working when discussing the user-centred design processes next to a long-time span and extended co-design processes. Additionally, it allows for clarity on the scales and levels of action during the extended design process. Hopefully, this research opens up discussions about the varied ways to implement design into the building planning processes.

11.4 Limitations

The limitations of the choice of topic

The scope of this thesis has been broad from the beginning. The focus was hard to choose because of the interest of the author. The author has established her own company recently in this same area of design, and she has simultaneously been doing projects that all have expanded the understanding of the topic of choice. The deep interest in the subject and the complex phenomenon with implications to many different disciplines made it challenging to narrow down the scope into the field of design. Furthermore, it was hard to separate this particular research from the other observations and insights experienced in the field. Thus, this situation of the author might have affected the academic work.

The scope of this thesis is on a strategic level. Due to the broad scope, precise results are difficult to pinpoint. With the rich data gathered could have been possible to find out more specific and targeted findings;

however, it would have needed more extensive research. These results presented in this study are done in the scope of the thesis.

The limitations of the choice of cases

The cases selected were all based on the same organisation and Real Estate owner. This might have affected the possibility of generalising the findings. These processes were all advanced in nature compared to smaller municipalities with fewer resources or knowledge about the ways in which to involve users.

The three cases selected included many of the same people, which made the processes very similar. Based on the interviewees, all of the processes were successful from the perspective of user involvement and collaboration. Moreover, the users, customers and stakeholders were all connected to different cases with a similar and specific profile as being either students, academics or officials in the context of a well-known University. Comparing cases with different user groups (not academics) and somewhat different collaboration processes might have been beneficial.

The limitations of the choice of research methods

The documentary research provided rich data to understand the cases better. Case studies are excellent research methodology precisely in that, providing comprehensive data to be analysed. However, the data collected was widespread, which led to challenges in the scoping of the thesis.

The participants appreciated the interviews; several mentioned how they thought that this topic demands research. The appreciation for the topic by the interviewees led to profound insights into the research questions. The lengthy processes create many events to discuss. Thus, the one-hour-long interviews were not able to go in-depth on the topic. The insights are related to the level of process and actions.

Additionally, the time limit of the thesis impacted the number of people interviewed and the time to immerse into the documents. Firstly, access to all of the data took time and the number of documents and reports

varied between different cases. Secondly, due to the three cases, the number of people interviewed per case was two to three. In order to gain a broader outlook, more voices should have been collected from the participants, such as construction specialists and workplace specialists. The limited participants have affected the research outcomes.

Additionally, the interview analysis, which was done first with the programme Atlas.io, was perhaps not an ideal tool to analyse this data. In the end, the analysis for the findings was done partly by following the extensive coding in the thematic analysis and re-iteration of the codes and themes with the re-iterated research questions. In short, the interview analysis could have been done later, after the three clear research questions were clarified. In this way, the selected tool for thematic analysis could have brought more value to the process.

The limitations of the language used

The topic of the thesis has specific language used in English. Terms such as co-creation, co-design and user-centred design do not have well-established definitions in Finnish. The interviews were done in Finnish because all of the interviewees were Finnish speaking. However, the entire thesis is done in English, creating some difficulties in the translation of the interview transcripts. It was, therefore, necessary that the analysis with definitions be based on the meaning provided by the author.

11.5 Suggestions for future research

The opportunities for future research are multiple because of the complexity of the phenomenon. In the field of design, the value and role of the designer could be further explored. The service design team might have a multidisciplinary team with only a few educated designers. However, in such a case, the entire team is using design thinking. It would be tempting to research the value and role of design thinking as a mindset in these collaborative processes.

The different mixed approaches and methods would need further research based on the outcome and value they bring to the different aspects of the building and people using it. In this area, the connection

or disconnection of service design and workplace development create a fertile ground for future research.

In the field of design leadership and management, it would be essential to understand the flow of information and data created and how it is managed throughout the process. Moreover, change management and the commitment of people to the project are essential areas for future research both in design and other fields. Additionally, the insights collected from the users and customers would need further research on how they are used in the different stages or how they could be used to serve the process better. An example in the LeC case is when designers and user groups collected extensive knowledge about the students of each school and used it to design the new learning centre. While this user knowledge could have been beneficial in other cases, it was not used in the other projects. Organisational development creates an area for future research. Designers and architects must understand better how the levels of capabilities for change affect the ability of the organisation to co-create new solutions. During the interviews, change resistance was discussed because the stage of the organisation in the change curve affects their ability to create new solutions together. Future research is needed to understand which elements of design can support that change.

One compelling area for future research would be to understand the connection between democratic decision-making and collaborative design. Based on the insights, it seems that in the participatory process, the decision-making is done elsewhere, and the participatory or collaborative processes serve only implementing them. This differs from service design, where decision making can be part of the collaborative process. The collaboration in service design projects sets the shared direction, whereas in the participatory driven process ideas are created and conceptualised together in a small group, but the actual decision-making stays separate. Therefore, this area could be exciting to explore more.

The focus of this study has been in the user-/human centred design approach. However, the future holds challenges that need more sustainable and system-centric approaches. Future research is needed to understand how these two approaches can be connected and what the role of design could be in that specific environment.

11.6 Conclusions

The main objective of this research has been to explore the phenomenon of user-centred and collaborative design in the context of the architecture and building planning. The research questions have been investigated through the findings from the multiple case studies, and the insights learned from the literature review. This study aimed to answer the three research questions. The multiple case studies conducted with documentary research and semi-structured interviews increased the understanding of the various design and design-related actions during the planning process. Additionally, the study clarifies the aims of user involvement along with insight in how to take the human centredness to the next level. The literature review crystallises the terminology used and creates a framework from which to analyse the actions of the cases and to create a proposal on how to conduct even more profoundly human-centred design processes. The main insights are summarised to create more universally applicable conclusions.

The first research question was directly focused on the case studies and aimed to understand the actions of a lengthy user-centred process of building planning, defined as "What are the actions creating a user-centred and collaborative building process?". The actions performed are introduced in chapter 8, alongside the overall picture of the process. Based on the documentary research, a map of actions was created to investigate the differences and aims of various participatory and collaborative actions. This map was evaluated during the interviews, and three primary levels were identified from there. These levels included communication and documentation, functional planning and decision-making. The findings were connected to the literature review, and two main insights were further drawn from there. The first is that building planning holds the potential for organisational renewal, whereas expanding design approaches could enhance this potential. Secondly, that the three levels of action could be connected with a knowledge creation aims of strange, sense, and changemaking, this brings clarity on the intentions of varying levels. The level of communication and documentation have sensemaking characteristics, whereas the functional planning level aims to combine traditional design with change- and sensemaking objectives. The decision-making holds the change-making power with the support of the communication and functional planning levels.

The focus of this thesis has been to understand better the collaborative design and what it could be. These two perspectives were explored through two research questions. The first asked, "How can collaborative design be better understood and described in such a case?". The findings introduced scales of planning which was later turned into the five phases for collaborative design. Additionally, the findings clarified the varied aims of user involvement with different roles to consider during a lengthy process. Furthermore, a framework to evaluate the maturity of the collaborative design was introduced in the literature review. This framework place the focus on strategic approach and method selection instead of supporting one approach from another.

The final question was "How could have the process been more profoundly human-centred?". The insights were gathered from the entire data to envision the best possible process (see, Figures 25-26). First of all, the most significant opportunity to influence the process is at the beginning where the future vision and human perspective should be enhanced. Next, the conceptual planning of functions could be done simultaneously with customer and employer perspectives. The purpose of the user knowledge is to work as an inspiration and increase the shared understanding. The next phase of taking conceptual ideas into concrete solutions, the user knowledge could be used as a tool to test the solutions and develop the experiences even further. Later, when entering into detailed planning, the user knowledge is a way to test usability and remind the designers about the people in the centre of it all. In other words, the results of this study suggest that by using user knowledge as a guiding element, the mindset of human-centricity is more accessible throughout the process. Additionally, the strong concept of a vision works the same way. As mentioned by one of the interviewees "the vision can support the entire project".

"The vision can support the entire project."

To conclude, user involvement in its many forms has become increasingly popular in the built environment. Gradually, a user-centred design approach is supported with new design and user innovation approaches to address the scale of complexity in the challenges of today. Whereas service design is expanding towards transformation design, the community-driven approaches are expanding how to involve users. When it comes to a lengthy building planning process, a structured and quality collaboration is required to ensure the resources for it. These

new approaches where designers bring the right mindset and tools for communities to use are creating a fertile ground for future collaborations. Inevitably, the role of design in the context of building design and planning is taking on new roles.

The motive to study this topic has been to grow professionally towards more strategic use of design approaches. After working for four years in the field of workplace design, in an architect office, the new discussions about the use of service design drew the author to study this topic further. Additionally, the new guideline introduced by the Building Information Group raised several exciting discussions in Finland about the question of what user-centred building planning process entails. Therefore, this thesis aims to contribute to the understanding of the complex phenomenon of the user-centred and collaborative design process within the long building planning process. This work aims to clarify what we mean when we talk about user-centred planning processes as well as to provide insights for practitioners such as designers, architects and builders. Finally, the thesis aims to provide valuable insights for people who might be embarking on a somewhat similar journey.

The future research areas for this topic are multiple. From a design perspective, the most relevant and intriguing ones can be argued to be the strategic method selection, connection of service and workplace design and finally, sensemaking in the process of creating a shared vision of the building early in the planning process.

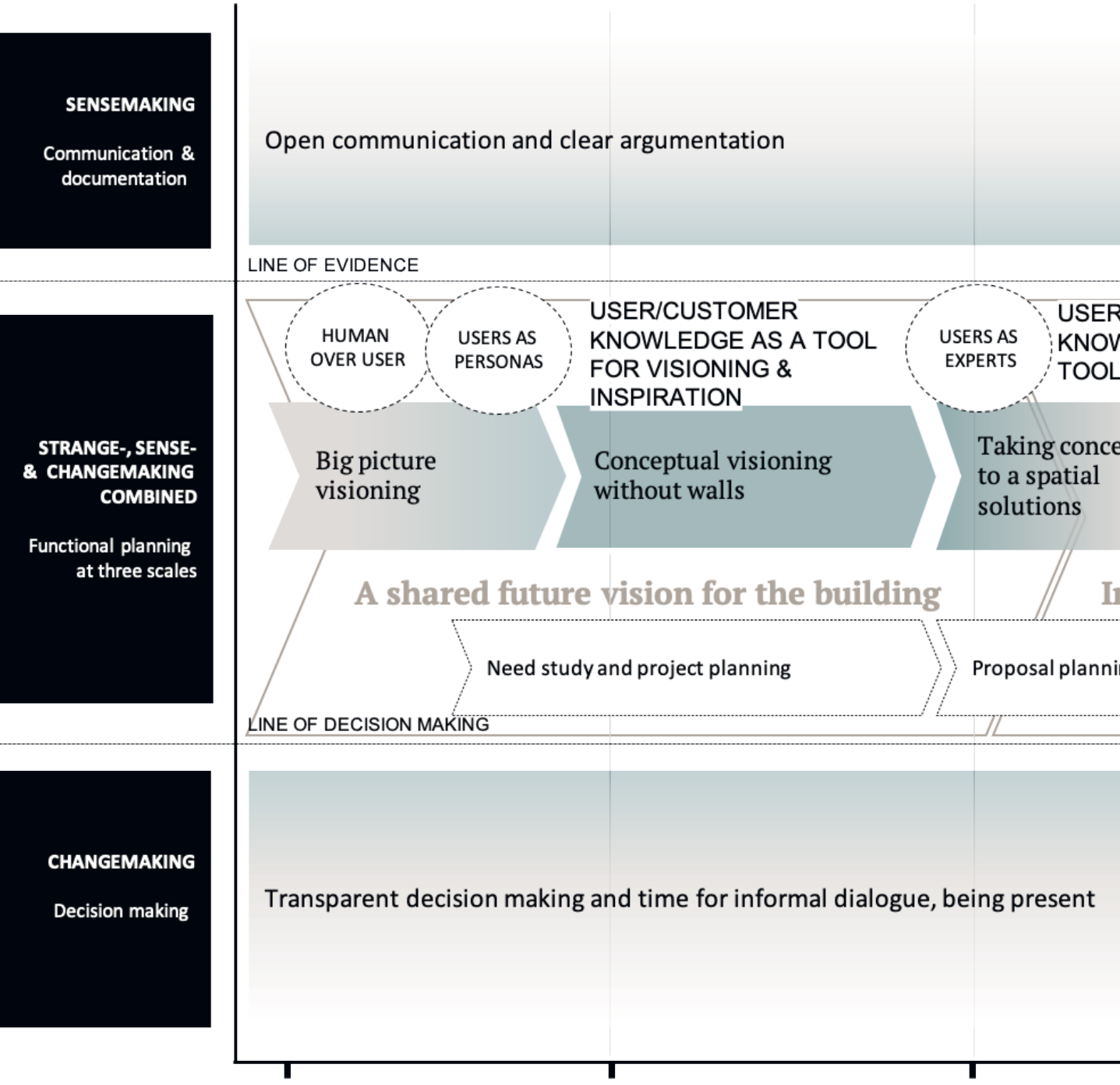
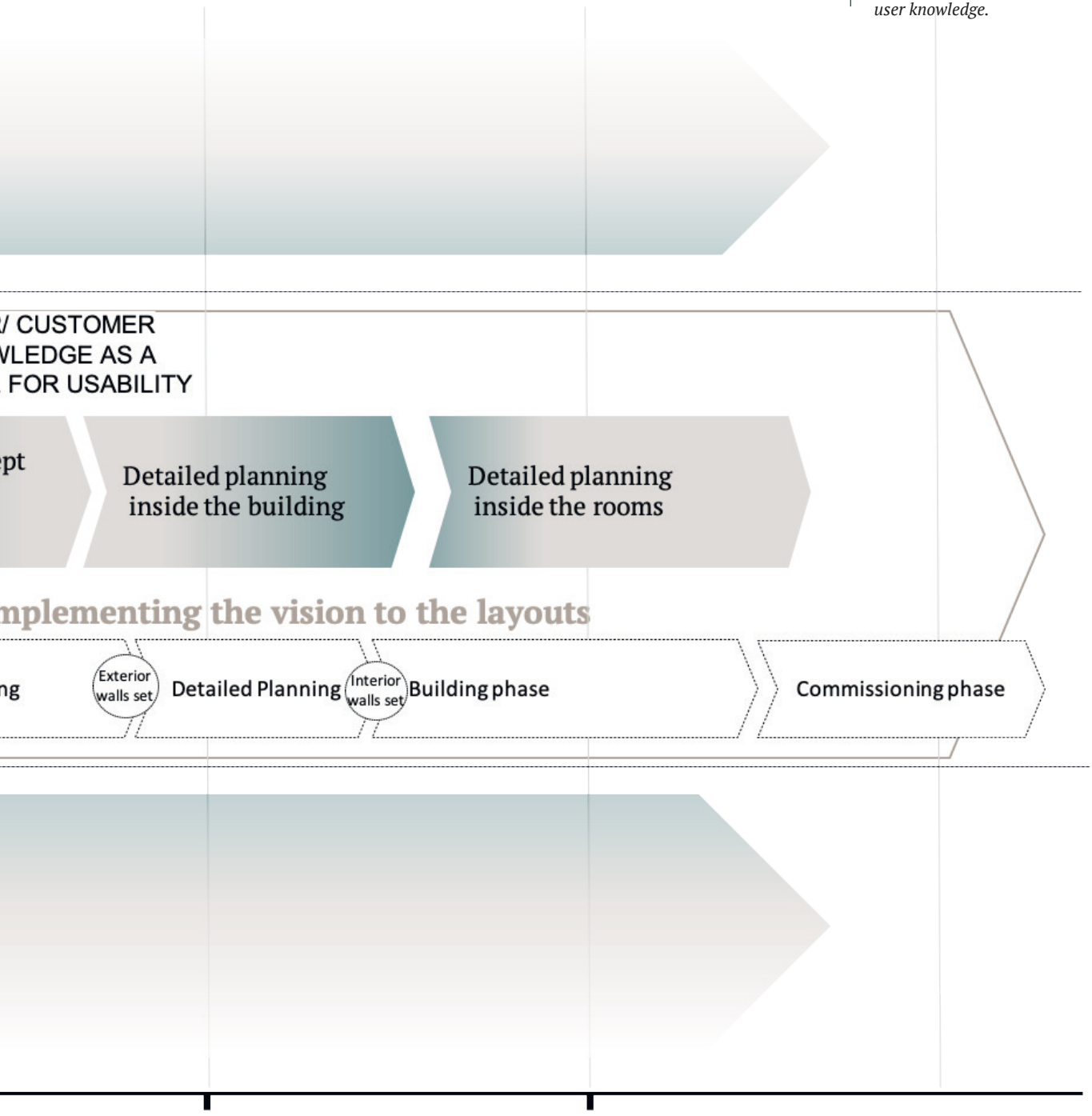

SENSEMAKING
Communication & documentation
Open communication and clear argumentation
LINE OF EVIDENCE
STRANGE-, SENSE- & CHANGEMAKING COMBINED
Functional planning at three scales
HUMAN OVER USER
USERS AS PERSONAS
USER/CUSTOMER KNOWLEDGE AS A TOOL FOR VISIONING & INSPIRATION
USERS AS EXPERTS
USER KNOW TOOL
Big picture visioning
Conceptual visioning without walls
Taking conce to a spatial solutions
A shared future vision for the building
Need study and project planning
Proposal planni
LINE OF DECISION MAKING
CHANGEMAKING
Decision making
Transparent decision making and time for informal dialogue, being present

Figure 26. *A framework of user-centred process with the levels of action and role of the users combined with user knowledge.*



Note for the reader: The complete visualisation can be discovered in Appendix 6.

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APPENDICES

APPENDIX 1.

THE INTERVIEW STRUCTURE, IN ENGLISH

Background and definitions of design

1. To start with, can you tell a little bit about yourself and your background. What is your role in the organization you work for? Is it the same one as during the project studied? What is was your role in the building process of Väre/Biz and/or Learning center?
2. In many sources, the process of Väre is mentioned as a user centered building and an outcome of a user-centered design process. How would you freely describe what does that mean to you?

The documentation of the building processes/ess – Framework for the discussion: the preliminary findings from documentary research, process map

3. In your own words, could you tell the building process of Väre/Biz/Learning Center as a story? You can use the process map as a framework if you want.
4. What was the building or construction process like?
5. What kind of user or stakeholder involvement was organized and in which stages?
6. What was the goal of the participation or collaboration?
7. Do you know, how did the three cases differ from each other, if yes, how and why?

The collaboration and participation plan

8. Was there a participation plan for the case?
9. How was the overall process of planning decided?
10. Why those co-design activities were selected?
11. How did the three cases differ in the planning?
12. In the previous part we discussed about the goals of the process, can you freely go through those goals again? Were these goals followed by some metrics or research methods? If these were followed – what kind of results were gained?
13. Would you say that the processes of co-design were successful? Why and why not?

The learnings from the user involvement/collaboration

14. What were the biggest pain points of the user and collaborative process?
15. What were the most successful practices in place to support the user and collaborative process?
16. In general, what value did user and collaborative practices bring to the building process? What was the role of design in all of that? Do you have any examples?
17. Reflecting back, would you change some of the ways in which users or stakeholders were involved? If yes, how? If not, why?
18. Overall, what would you say was the most important part of the involvement considering the end result? Why?
19. End of the interview: Do you have any questions, additional points, questions about the ethics or anything else at this point?

APPENDIX 2.

THE INTERVIEW STRUCTURE, IN FINNISH

Taustatiedot sekä muotoiluymmärryksen kartoitus

1. Voitko kertoa hieman itsestäsi ja taustastasi? Mikä on roolisi organisaatiossa, jossa työskentelet? Onko se sama kuin projektin aikana?
2. Monessa lähteessä mainitaan, että Väre/BIZ/LeC prosessi oli käyttäjälähtöinen. Miten sinä ymmärrät käyttäjälähtöisyyden? Mitä se sinulle vapaasti kerrottuna tarkoittaa?

Rakennushankeprosessin/ien mallintaminen - Alustava tutkimustulos, prosessikartta keskustelun tukena

3. Omien sanojesi mukaan, voisitko kuvailla rakennushankeprosessin/prosessien etenemistä tarinan omaisesti? Voit käyttää prosessikuvaa tarinan tukena, jos haluat.
4. Millainen rakennushankeprosessi oli kyseessä?
5. Mitä erilaisia käyttäjä- ja sidosryhmäosallistamisen tilanteita järjestettiin ja missä eri vaiheissa? Olivatko ne osa muotoilun keinoja vai erillisiä?
6. Miksi heitä osallistettiin? Mitä tavoitteita osallistamiselle ja yhteistyölle oli prosessin eri vaiheissa?
7. Tiedätkö, miten eri tapausten prosessit erosivat toisistaan ja miksi?

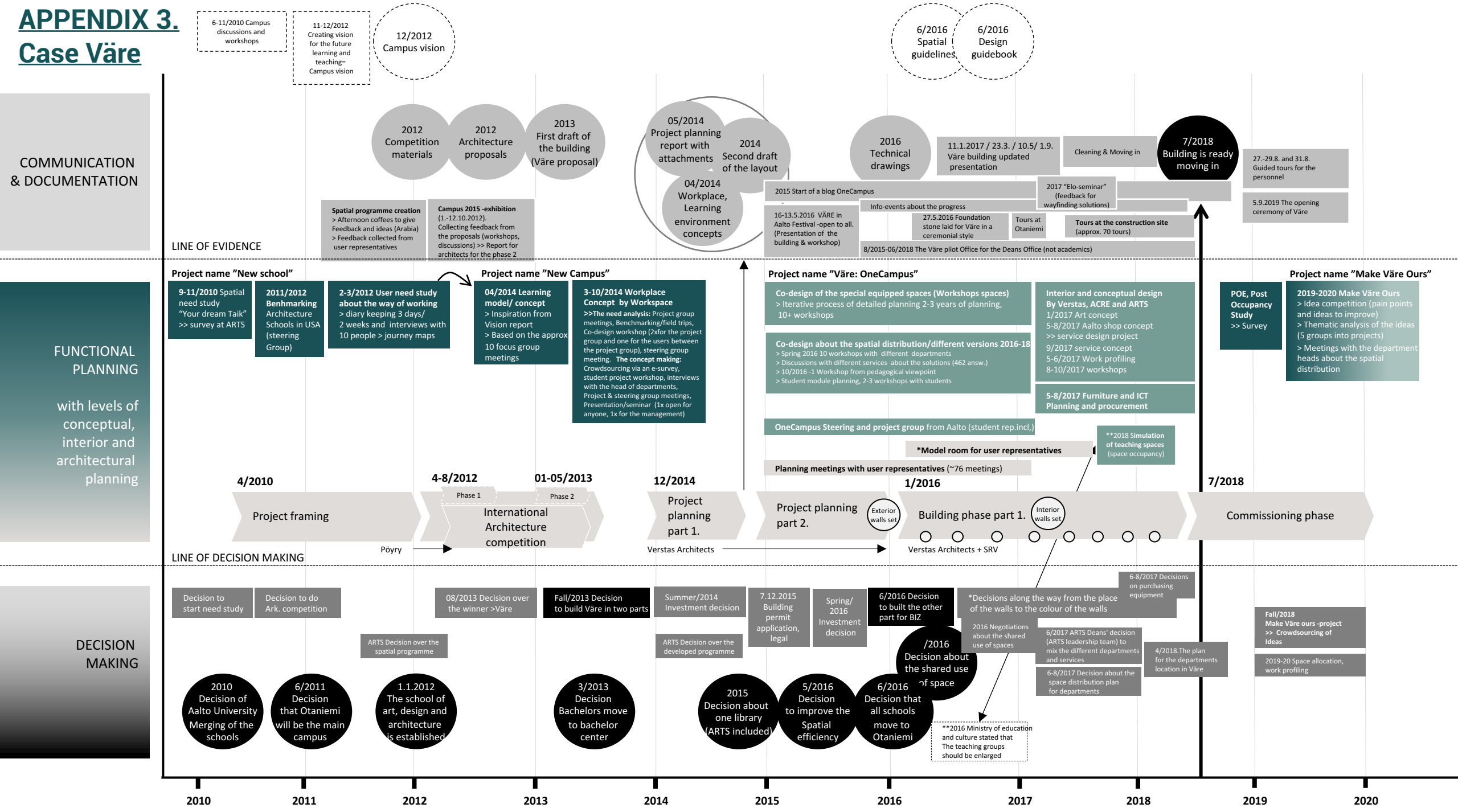
Yhteiskehittäminen ja osallisuuden suunnittelu

8. Oliko tälle hankkeelle olemassa käyttäjälähtöisen kehittämisen suunnitelma?
9. Miten äsken läpikäyty kokonaisprosessi suunniteltiin? Miksi kyseiset keinot ja tavat valittiin?
10. Miten käyttäjä- ja yhteiskehittämisen menetelmät valittiin?
11. Miten kolme hanketta erosi toisistaan ja miksi?
12. Edellisessä kohtaa kävimme läpi tavoitteita, joita kehittämiselle asetettiin, kerrotko vielä vapaasti mitä tavoitteita olikaan?
13. Seurattiinko tavoitteita jollakin tavalla? Miten ja mitä tuloksia mahdollisesti saatiin?
14. Sanoisitko, että yhteiskehittämisen prosessi oli kokonaisuutena onnistunut? Miksi, miksi ei?

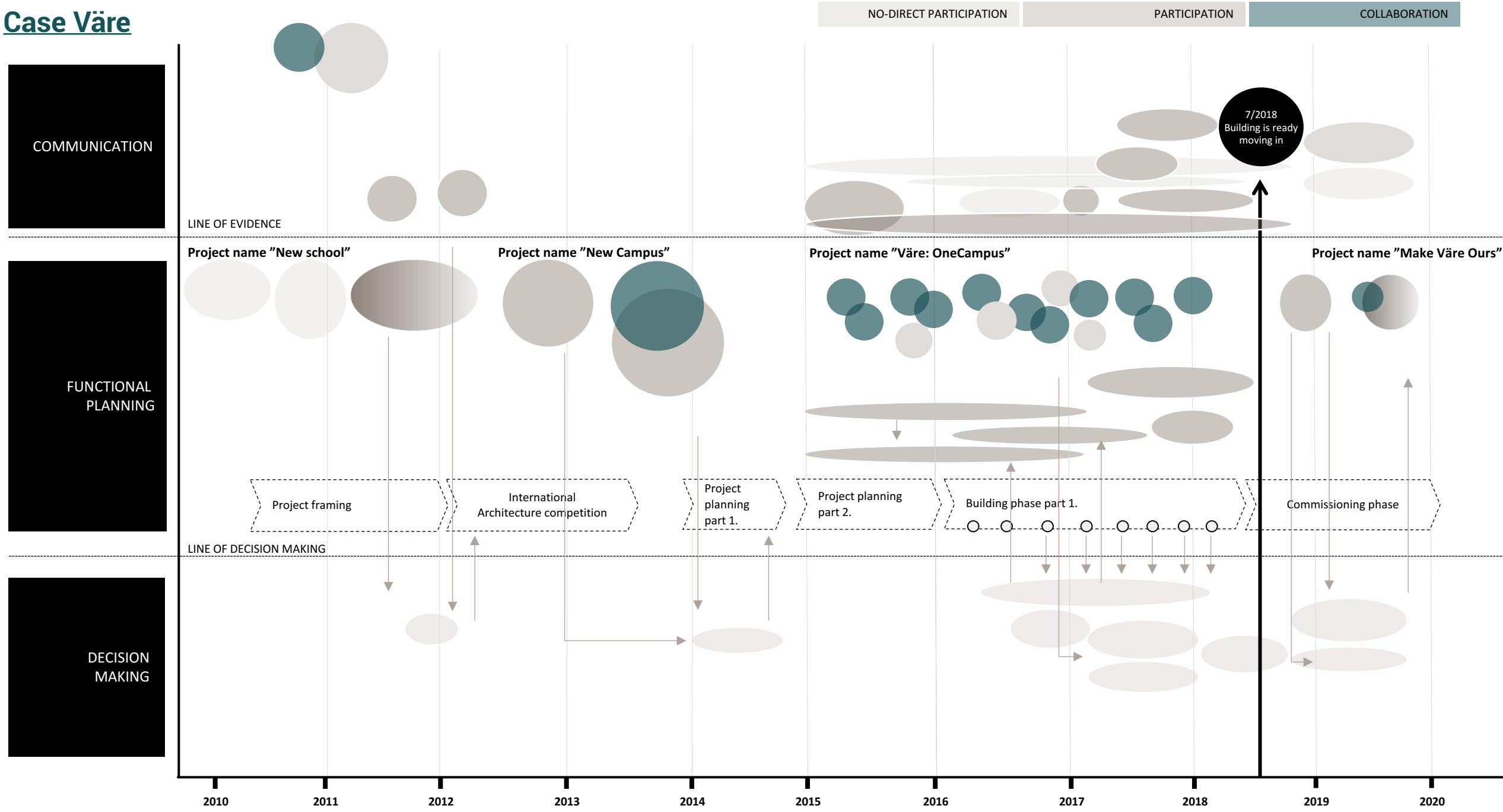
Opit käyttäjä- ja yhteiskehittämisen prosessista

15. Mitkä olivat käyttäjä- ja yhteiskehittämisen suurimmat kipupisteet prosessin aikana?
16. Mitkä asiat olivat prosessin aikana suurimmat onnistumiset liittyen käyttäjä- ja yhteiskehittämiseen?
17. Yleisesti katsoen, mitä arvoa käyttäjä- ja yhteiskehittämisen keinot toivat rakennushankeprosessiin? Miten erottelisit muotoilun arvon? Tuleeko mieleen esimerkkejä?
18. Nyt kun katsot taaksepäin, muuttaisitko jotenkin niitä tapoja, miten käyttäjät ja muut sidosryhmät osallistettiin? Jos kyllä, mitä? Jos et, miksi?
19. Kokonaisuudessaan, mikä on kaikkein tärkein osallistamisen vaihe tai osa lopputuloksen kannalta? Miksi?
20. Haastattelun lopuksi: Onko sinulla tullut mieleen joitakin kysymyksiä, lisäyksiä tai muita ajatuksia mieleen, mitä haluaisit tähän loppuun lisätä?

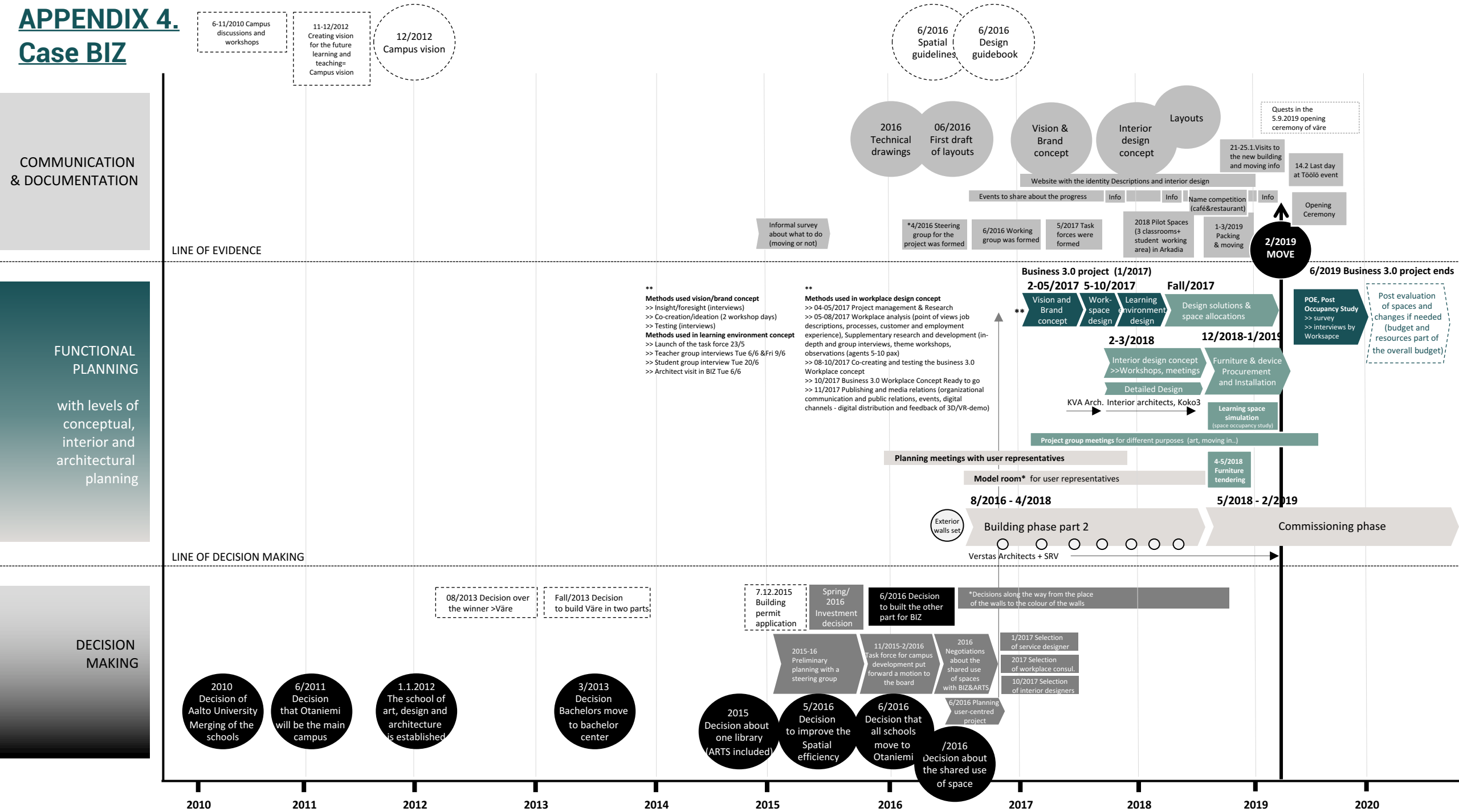
APPENDIX 3. Case Väre



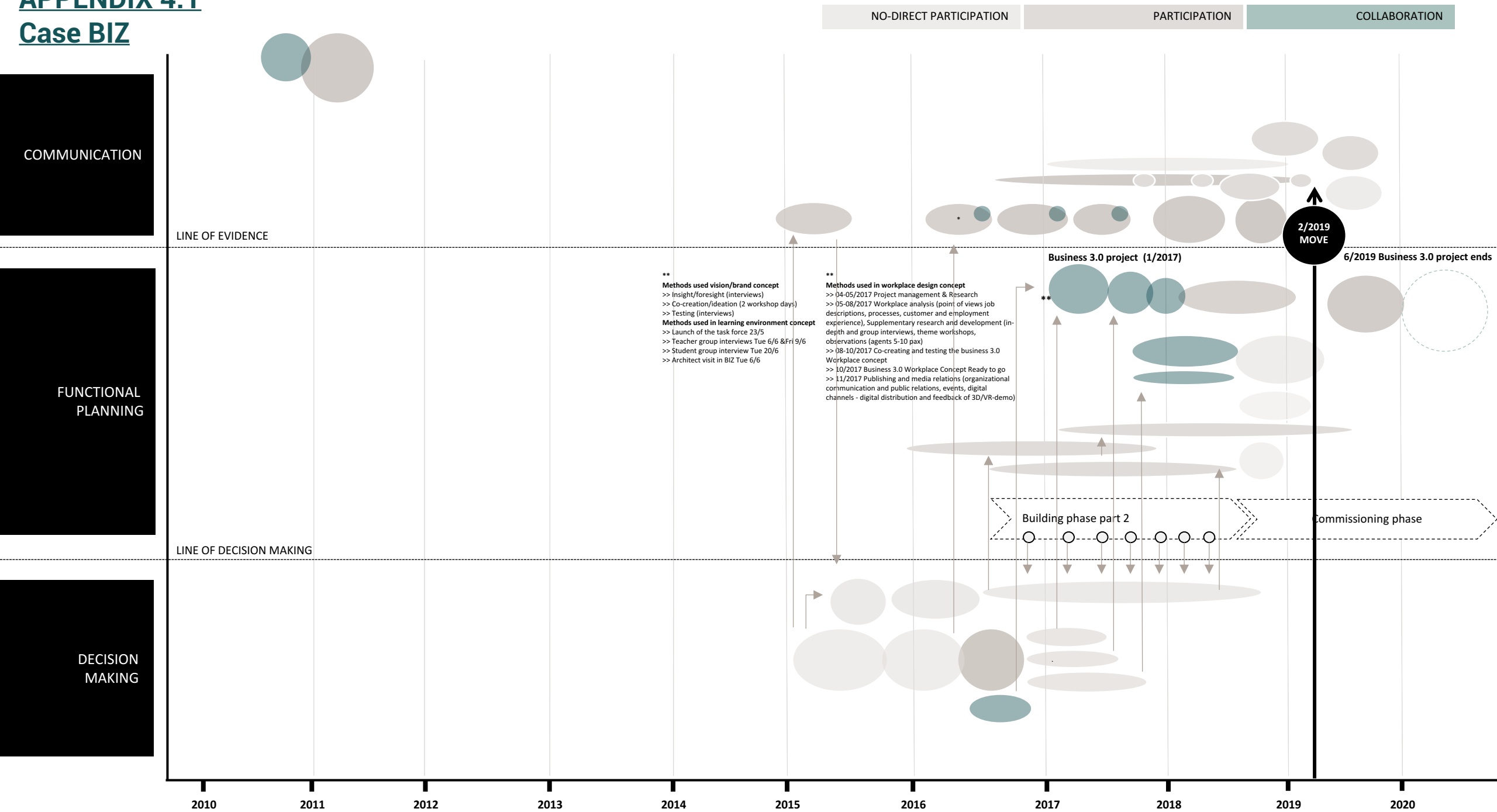
APPENDIX 3.1.
Case Väre



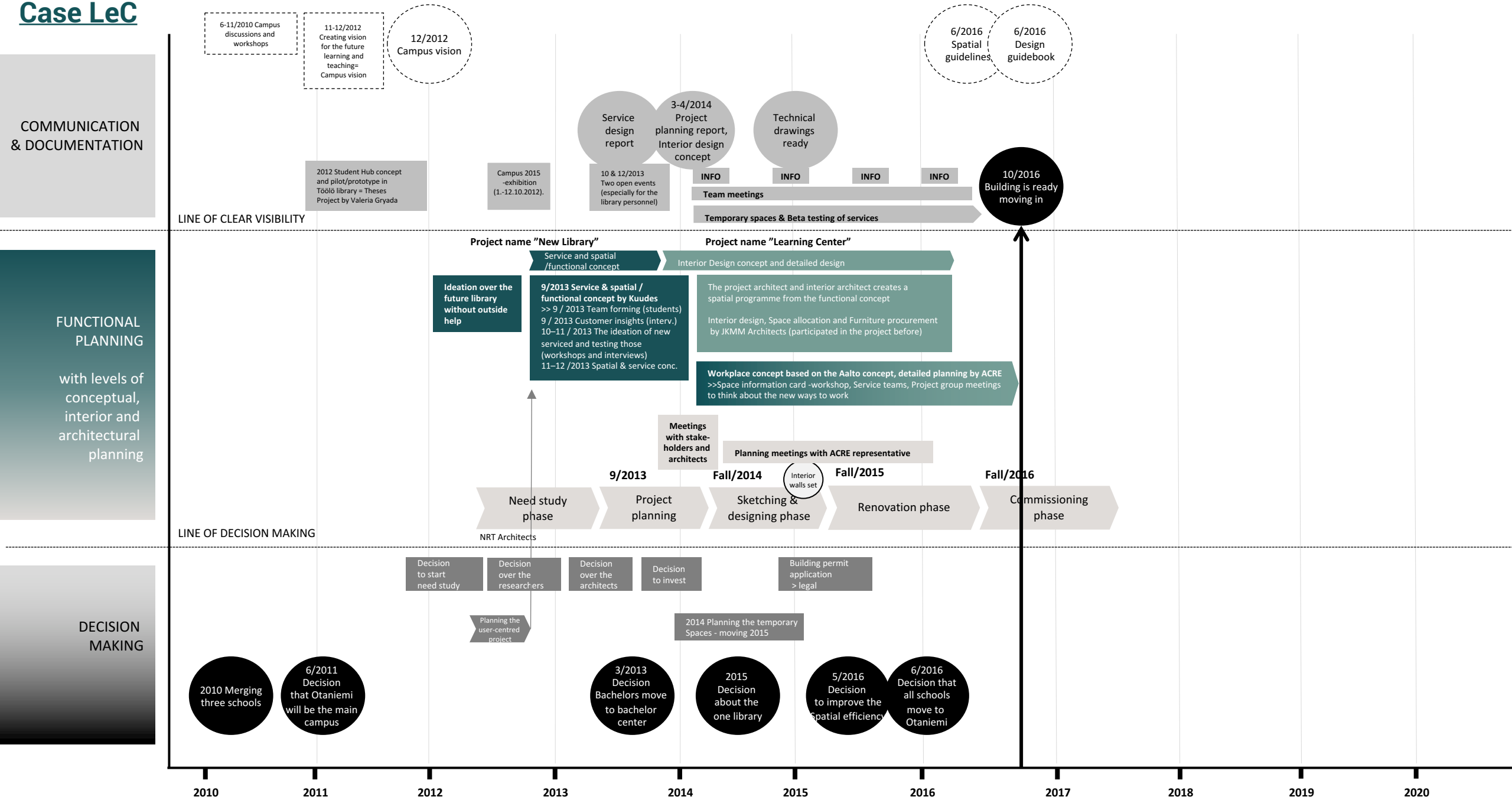
APPENDIX 4. Case BIZ



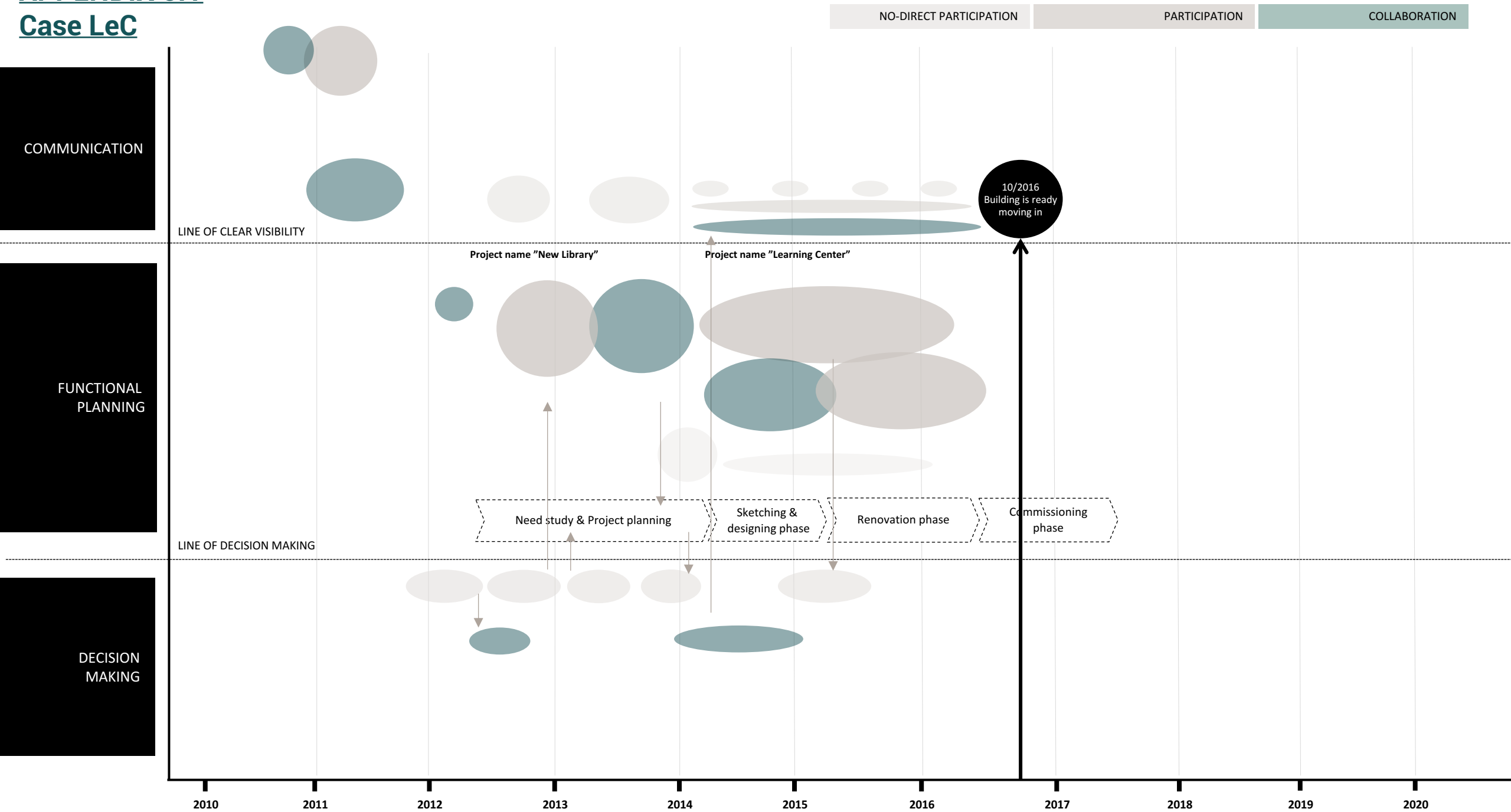
APPENDIX 4.1
Case BIZ



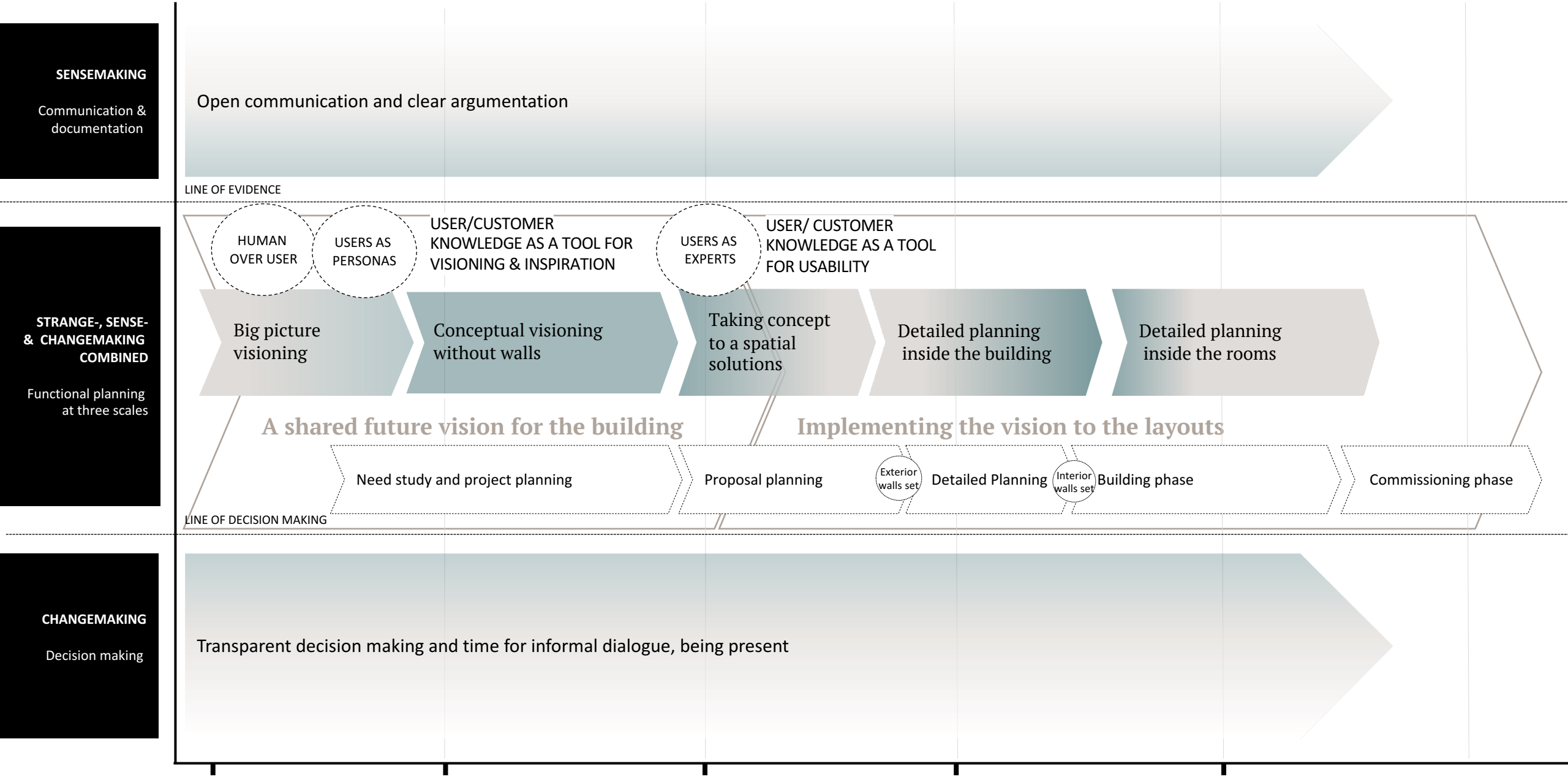
APPENDIX 5.
Case LeC



APPENDIX 5.1
Case LeC



APPENDIX 6.
The ideal process

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